

MARCH 1916 - NO 123

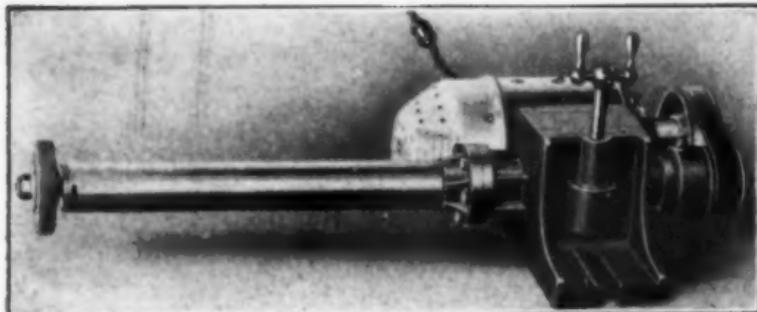
Monthly

A Reference for Buyers

HITCHCOCK'S
**MACHINE
TOOL LIST**

Distributed Free to Machine Tool
Users Everywhere in the United States and to
Dealers in American Machinery Abroad

Published by
A. H. HITCHCOCK
1220-1235 Caxton Building
Chicago



Combination Internal & External Grinder

Designed for a wide range of accurate work

Smaller size machine will grind internally as small as 13-16" diameter; larger size as small as 2 1/8" diameter; depths up to 16".

Internal Grinding speeds 10,000 R. P. M.—6,000 R. P. M.;
External Grinding speeds 4,500 R. P. M.—3,000 R. P. M.

Slower speeds with increased power for carrying larger internal grinding wheels can be obtained by changing size of pulley.



Hand and Breast Drill

Made in five sizes. 3-16" to 1/2" Capacity.

Most Complete Line of Portable Electric Tools
Write for New Catalogue B

THE HISEY-WOLF MACHINE CO., Cincinnati, Ohio

New York Office, 50 Church Street



NAMCO

Two Spindle Bolt Threader

This NAMCO two Spindle Semi-Automatic Bolt Threader is especially designed for rapid threading of Bolts, Screw Blanks and Bars of any length.

It is a simple machine and will cut alternately.

Operation consists of merely starting the thread, the distance of travel and release are automatically controlled.

NAMCO Self Opening Automatic Dies are standard equipment.

Capacity 3/16" - 5/8" V or U. S. S. Threads - 1" S. A. E. Thread

The National-Acme Mfg. Co.
Cleveland, Ohio

Eastern Plant: Windsor, Vt. Canadian: Montreal, P. Q.
Offices: NEW YORK CHICAGO BOSTON DETROIT

Foreign Representatives: Burton, Griffiths & Co., for England.
Benson Bros. at Sydney, for Australia. Schuchardt & Schutte, for Germany

YOU Want Tool Holders that have MADE GOOD

Armstrong Tool Holders

Were Awarded The

Grand Prize

The Highest Possible Award at the Panama-Pacific International Exposition—1915

They Always Make Good



They Are Used in Most of the Big Machine Shops of the World

Send for Catalog

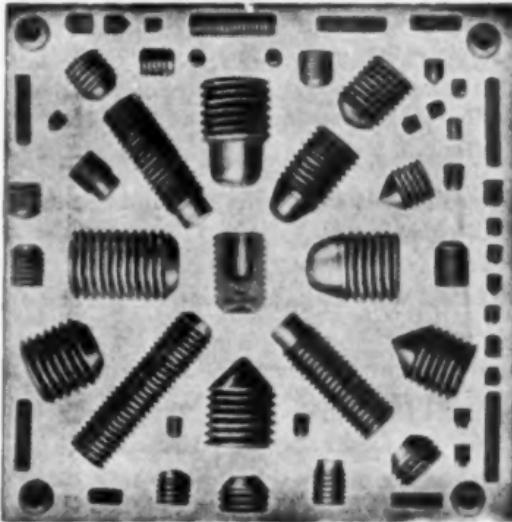
Armstrong Bros. Tool Co.

"The Tool Holder People"

308 N. Francisco Ave., Chicago, U. S. A.

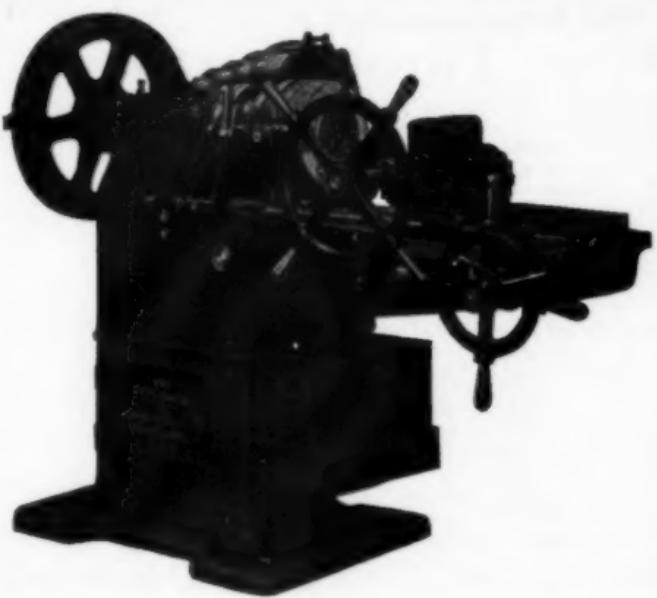


Allen Safety Set Screws



Send for circular No. 13 and sample screws (for testing).

ALLEN MFG. CO., - Hartford, Conn.



Reliance Bolt Cutters

Built in sizes $\frac{3}{4}$ inch to 6 inches, Single, Double and Triple, of the most up-to-date design. There is, also, a good reason why the "Reliance" is such a satisfactory machine for accuracy of threads cut, large production and low cost of maintenance, even in the hands of inexperienced labor. A lot of this reason is in the Opening Die Head, and we would like to tell you all about it. Interesting information for the asking.

The Foote-Burt Co., Makers
Cleveland, Ohio

The "Quickwork" Edge Turner

For turning edges on fenders, shields, aprons, tanks, or any other parts made of sheet metal up to No. 16 gauge.

No matter what your work of this kind may be, we can furnish the rolls that will adapt the machine to your particular requirements—also with beading, crimping and flanging rolls, and rotary cutters for shearing metal. This machine is a wonderful cost-reducer, while increasing production and improving the quality of the product.

Every up-to-date sheet-metal-working plant should be posted on our modern Edge-Turning Machine, as well as on our "Quickwork" Rotary Shears, Power Beaders, Beading and Bending Machines, Power Hammers, etc., etc.

Put your sheet-metal-working problems up to us. We are experts. And write now for "Quickwork" catalog.



H. Collier Smith, 815 Scotten Ave., Detroit, Mich.

Dalton 6" All-Around Lathe



Manufacturing: Many plants are shaving costs by using Daltons on small parts in quantities.

Precision Work: Built for the finest and most accurate work done in the tool room.

Power: With strength and power for work often done on 14" to 20" lathes.

Screw Cutting: 3 to 144 per inch.

Electric drive, foot power or power driven; various mounts, for floor or bench; several attachments.

Write for Bulletin B-600

Dalton Machine Company, Inc.
1901-1915 Park Ave., New York, N. Y.

Partridge Reliable
Small Turning Lathe Sets



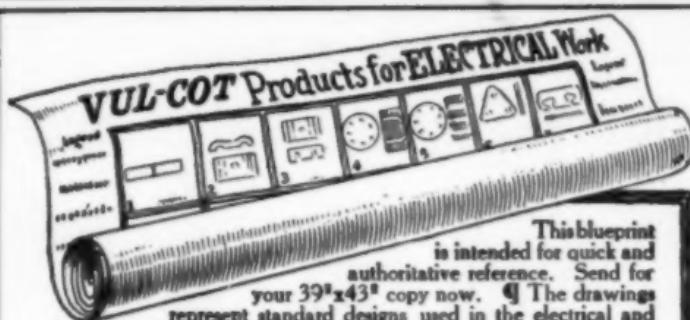
You will find these are excellent small Lathes. All parts are accurately made and fitted; the bottoms are planed true with the centers. The pulleys are crowned and turned inside. Nos. 1 and 2 have cast iron bearings, and the centers are No. 1 Morse taper. Nos. 3 and 4 have babbitted bearings, and the centers are No. 2 Morse taper.

The four sizes are made to swing 6, 8, 11 and 13 inches, respectively. They are useful for the polishing of small metal parts, and wood-turning. Write for prices.



I also make Grinders, Polishers, Foot Presses, Bench Tapping Machines and Countershafts. Prices of materials are advancing—send me your orders now.

**E. O. PARTRIDGE, 2041-2049
W. Lake St., CHICAGO**



This blueprint is intended for quick and authoritative reference. Send for your 39¹/₂ x 43¹/₂ copy now. The drawings represent standard designs used in the electrical and mechanical parts of machine tools. Many of them are for insulation purposes—others come among anti-friction and thrust bearings, frictions, etc. Each drawing is to scale, and is standard practice. Designers will find this blueprint of suggested uses of VUL-COT FIBRE most helpful in designing any machine parts where vulcanized fibre as such—and VUL-COT, especially—would be the most satisfactory material.

We will gladly send your copy along if you will write for it now.

American Vulcanized Fibre Co.
560-570 Equitable Bldg., Wilmington, Del.



Quick Action

This is what we call this new Machine Handle. Attached to any power tool, especially the heavier types; adjustments are made with more speed and less effort.

All kinds of standard and special Handles from steel for power tools and similar purposes.

Send for Catalogue and prices

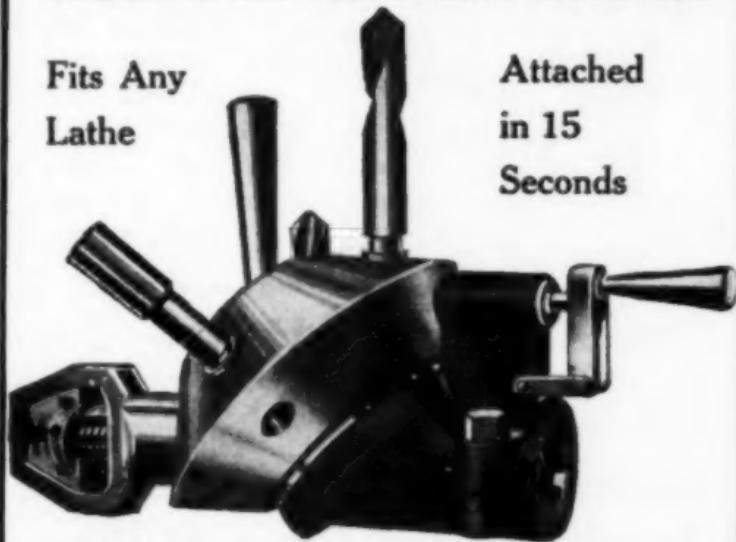
The Cincinnati Ball Crank Co.
Oakley, Cincinnati, Ohio

NEWMAN

MULTIPLE ROTARY CHUCK

Fits Any
Lathe

Attached
in 15
Seconds



A lathe may be made into a turret lathe with the Newman Multiple Rotary Chuck. Attach the chuck to the tailstock of any one of your engine lathes and you have the means of increasing production and cutting down costs. Thoroughly practical and absolutely accurate. Accommodates five tools for boring, reaming, tapping, etc. No changing of tools—positioning of each is easy and they automatically center. We will let you use a Newman for 30 days at our expense. Send for proposition.

The Newman Manufacturing Co.
717 Sycamore St., Cincinnati, Ohio

BRANCHES:

68 W. Washington St., Chicago 101 Fourth Ave., New York

In A Class By Itself



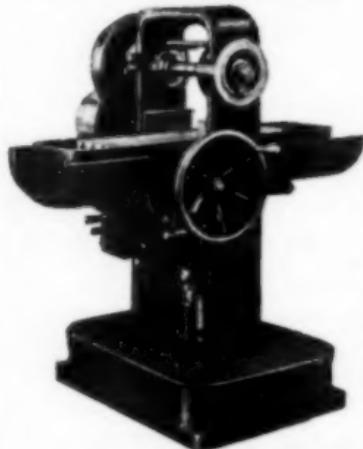
Is our New Model Bench Miller; because, we furnish with the machine our Quick operating Lever Vise, also Index Centers and two speed friction countershaft.

Send for circular

The Carter & Hakes Co.
West Winsted, Conn., U. S. A.

AGENTS—for New England and New York, Hill, Clarke & Co.
WESTERN AGENTS—Marshall & Huschart Machinery Co.,
Chicago, St. Louis, Indianapolis.

For Form and Gang Milling



Briggs High Duty Reduces Costs

Designed on original lines principally for form and gang milling of steel parts for automobiles, guns, etc.; also ideal for general use in the tool room and machine shop.

The direct geared drive close to the end of the arbor, and the heavy table with its powerful screw feed, are some of the features which enable the Briggs to cut hard steel on wide cuts to the full power of the 3½ in. double belt without any tendency to chatter.

Let us mail you full details of this top-notcher

GOOLEY & EDLUND, Inc., Cortland, N. Y.



“Whitney” Hand & Weight (feed) Milling Machine

Wide range with simple construction.

Greater Power than can be obtained on any other Hand Milling Machine of an equal size.

Vertical and Horizontal Feeds are independent. This feature permits work to be held close to the table and makes the Machine a Profiler.

The Spindle Head has Vertical Lever Feed and is accurately counterbalanced.

As the Vertical Lever Feed is independent from the Table and the Head accurately counterbalanced, light Milling may be done on long or heavy pieces without danger of breaking cutters.

The Spindle is driven by Interchangeable Side Driving pulleys, which, in connection with three Grade Cone on Back Shaft, gives Six Spindle Speeds.

The Table has Hand Lever Feed, also Crank Feed operated by Rack and Pinion.

The Pinion shaft is mounted in an eccentric bushing to allow for adjustment of pinion with rack.

Weight attachment is furnished for feeding both Head and Table automatically.

Catalog No. 10 Gives Full Particulars.

The Whitney Mfg. Co., - Hartford, Conn.
Chains — Keys — Hand Milling Machines.

Abbott Burnishing Process

Reduces Costs 75 to 99 Per Cent



The
Abbott
Burnishing
Barrel

When burnishing delicate parts or figured work, we use very small carbonized steel balls, as hard as flint, which reach every corner and crevice — 256 of them constantly rubbing under pressure upon each square inch of surface. For less delicate work, larger balls are used.

The process produces a more brilliant surface, without any bending or marring, or the removal of material. Estimates on your work made gladly.

The Abbott Ball Company

Elmwood District, Hartford, Conn.

We also make Steel Bearing Balls. Let us quote. What size?



Burke's No. 3 Bench Millers

Are Seasoned Tools

Our system of tests insures accuracy, and our methods of construction make it permanent. Frames and parts are carried 6 to 8 months, after work begins on them, before the completed tools receive our final O. K., and all parts are finished and fitted with exceptional care.

Longitudinal feed, 6 in.; traverse feed, $3\frac{1}{2}$ in.; vertical motion of knee, $8\frac{1}{2}$ in.; table surface, $3\frac{1}{2} \times 12$ inch.

Write for Catalog, which also shows larger and smaller sizes.

The Burke Machine Tool Co.
Conneaut, Ohio

The Handiest Tool Yet

For The
Garage or Repair Shop



A Lathe
Milling
Attachment



It will
make you

Big
Profits

Patented Apr. 1, 1913—Other Patents Pending.

It will do practically all classes of milling work

Costs Little—Does Much

Easy to Attach—Simple to Operate

The Cincinnati Pulley Machinery Co.
Cincinnati, Ohio

Dickow's Accurate 10-Inch Universal
Index Centers
Operate More Economically



SAVE YOU from \$40 to \$90 on first cost, and *many times that* by their simple construction and consequent ease of operation. Let's prove it to you. We are originators of the design.

Accuracy Guaranteed

Get the Original—Beware of Imitators
Sold by all dealers. Write today for particulars.
Fred. C. Dickow, 35 So. Desplaines St., Chicago, Ill.

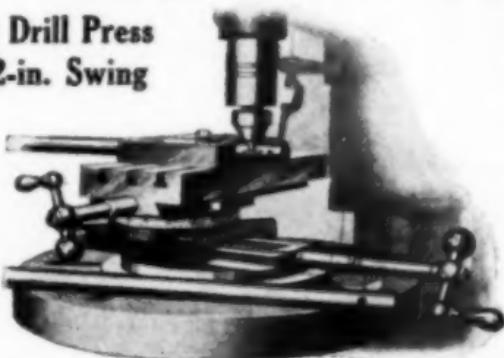
Davis Milling Attachment

For Any Drill Press
14 to 42-in. Swing

Big
Convenience

Big
Economy

Small
Price



The Davis cuts keyseats straight or taper cuts the Woodruff or half moon keyseats perfectly; also mills deep grooves, slots and cams, etc. Cutters are regular stock sizes, obtainable from all twist drill and cutter makers. Less than \$75 buys this strong and well made attachment. We also make Air Compressor at a low price for quality. Write.

**Hinckley Machine Works, HINCKLEY,
ILL.**



**3-Inch
Cutting-
Off
Machine**

DAVIS

3" 4½" and 6"

Cutting-Off Machines

are double-bladed high speed economical and efficient tools, far superior to the slow and expensive cold saw method of cutting off and trimming round stock.

Let us send you a catalog

Davis Machine Tool Co., Inc.
Rochester, N. Y., U. S. A.

A Really High Speed Saw

Marvel No. 4

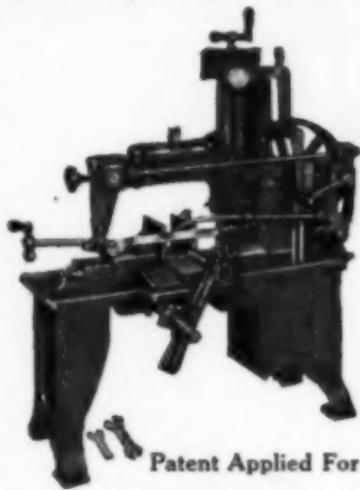
Cuts 6-in. round cold rolled steel in 10 minutes; smaller sizes in proportion.

Cuts on draw stroke only, with any desired pressure, and with quick return.

A strictly high-grade tool, improved right up to the minute—the kind that it pays to buy.

Also other Hack Saws,
Punches and Shears.

Write for Circulars



Patent Applied For

Armstrong-Blum Mfg. Co., 341 N. Francisco Ave.
Chicago, Ill.

Peter Bros. Metal Cutter

Makes a Straight, Smooth Cut

through high speed or any hardened steel, broken reamers, taps, forming tools, etc., or through copper or brass tubing, aluminum or other relatively soft metals, so quickly that it costs next to nothing. Doesn't draw the temper. Only 1-16th inch waste. No loss, either in time, labor or material, in grinding rough or broken ends to shape.

8" Size, \$17.50, with C. S.

Splendid for tool room. Cuts high-speed steel up to 8" square.

12" Size \$44.00, with C. S.

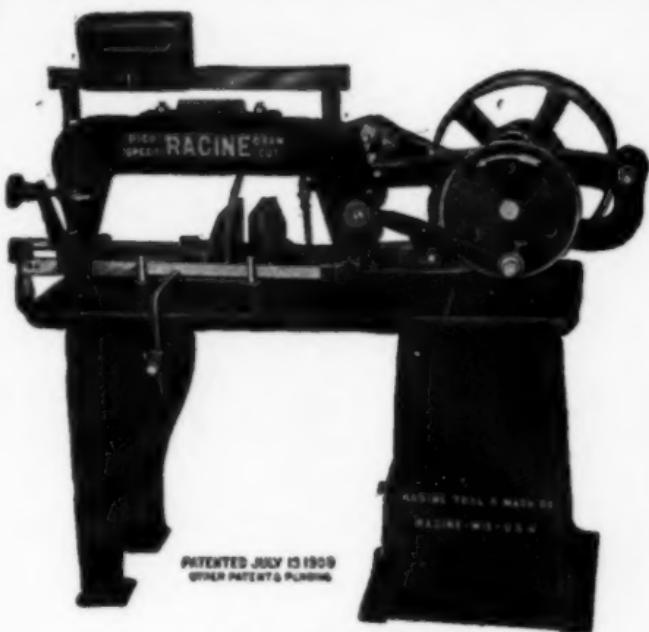
Cuts up to 2 $\frac{1}{2}$ " diameter, round or square, at any angle up to 45 degrees. Ball bearing.

15 Days' Free Trial

Write us or ask your dealer



PETER BROTHERS MFG. CO.
115 Railroad St., Algonquin, Ill.



No. 1—Eats Steel

Why Is It

That so many large shops are now equipped and being equipped with

The Newly Improved Racine High Speed, Metal-Cutting Machine?

FOR MANY GOOD REASONS—among others—because for speed, accuracy, economy and ease of operation THE RACINE cannot be surpassed. You MAY NEED ONE NOW. We will send a RACINE on any trial basis that is fair. WRITE US or any good dealer.

Racine Tool & Machine Co.

1500 Junction Ave. S., Racine, Wis., U. S. A.

A New Tungsten Hack Saw Blade

That will out-wear and out-cut
all others in High-Speed Sawing

Made from a new high Tungsten Alloy Steel, from our own special formula, and individually hardened and tempered by a special process. It is producing markedly superior results in speed of cutting, in durability, and in freedom from breakage. It is the blade you have been looking for. Note prices:

Simplex Rapid Blades for Hand Frames

Regular—14 teeth to inch for soft steel, iron, etc.

Fine—28 teeth to inch for iron pipe, brass,
copper and tubing

$\frac{1}{2}$ in. wide; .026 in. thick

Length	6"	7"	8"	9"	10"	11"	12"	14"
Per Gross	\$7.00	7.50	8.00	9.00	10.00	11.00	12.00	14.80

Simplex Rapid Blades for Power Saws

$\frac{3}{4}$ in. wide; .033 in. thick; 14 teeth to the inch

Length	12"	13 $\frac{1}{2}$ "	14"	16"	16 $\frac{1}{2}$ "	17"	18"
Per Gross	\$16.20	18.90	18.90	21.60	23.00	23.00	24.30

Simplex Rapid Blades for High Speed Power Saws

These blades are made for *Rapid* Cutting

$\frac{3}{4}$ in. wide; .050 in. thick; 10 teeth to the inch

Length	10"	12"	13 $\frac{1}{2}$ "	14"	16"	16 $\frac{1}{2}$ "	17"	18"
Per Gross	\$19.50	23.40	27.30	27.30	31.70	33.15	33.15	35.10

*Send a sample order and give it the hardest
test you can. You will be glad you did.*

Simplex Tool & Supply Co.
127 Oliver St., Boston, Mass.

12 Seconds

**In Cutting Off 2½-in. Round Manganese Bronze
is a New Record made by**

The Peerless High Speed Power Hack Saw Machine

**Cuts a 3" Round Cold Rolled Bar in 1½ Minutes
Compare this with Your Cutting Time**

You may need additional cutting-off machines, but have not the floor space. This problem may be solved if your next cutting-off machine is a Peerless, for the reason that instead of using several machines one will answer your purpose.

You can also save several seconds on each cut, because when cut is through, the saw frame is automatically raised. All that is necessary is: open the vise, move stock, re-close vise and start machine. You have no saw frame to hold on to while machine is getting started. In starting machine, the saw can never drag on the non-cutting stroke, regardless of the position at which the machine may stop. Neither can the saw frame drop in case of breaking a blade, thus preventing what might cause costly accidents.

*If production and time are important,
write us for complete description.*

Peerless Machine Co.

1609 Racine St.,

RACINE, WISCONSIN

Economy and Satisfaction



"Bantam"
For
Light Shafting

are assured by
the use of our

Unbreakable Steel Counter- shaft Hangers

They cost somewhat less than cast-iron hangers, although they would still be economical if they cost even more.

They are well made of strong, tough open-hearth pressed steel; they do not break in handling or in use; they are much lighter and stronger than cast iron, and ring-oiling bearings provide perfect lubrication, requiring only occasional attention.

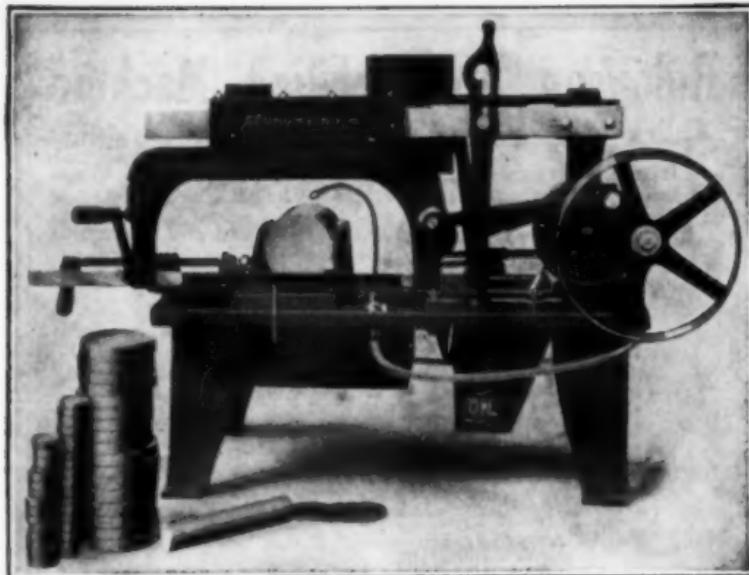
Many large concerns who once made their own hangers have found it more economical and satisfactory in every way to use the Standard Unbreakable kind, which are turned out in a full range of styles and sizes for every kind and condition of service, and upon the lowest possible basis of cost for quality.

*We'd like your inquiry
You'd like our Hangers*

Standard Pressed
Steel Company
Philadelphia
U. S. A.



"Hallowell"
For
Medium Shafts



Economy High-Speed Power Saws The Oil Compression Lift

The greatest improvement yet made in high-speed power saws, and the only reliable and effective lift for the blades on the return stroke. Absolutely automatic, requiring no attention whatever from the operator, *it gives 200 per cent more service from blades.*

One user cut 15 tons of I beams with one blade. We have cut 570 sq. ins. of c. r. steel with 30 cents' worth of blades; cut 2" steel in $3\frac{1}{2}$ minutes, and 5" in 18 minutes, under ordinary conditions.

If you want to save real money on your cutting, we can show you how. Glad to do it without cost or obligation.

Get in touch with us

W. Robertson Machine & Fndry. Co.
Buffalo, N. Y.

Robinson Bench Filing Machine

Quick—Accurate—No Special Files Required

The picture shows our No. 1 machine. Slip in an ordinary file, and it is always ready for work—no waiting for special files.



Just like filing by hand, but multiplied by speed and power, with adjustable stroke for roughing and finishing.

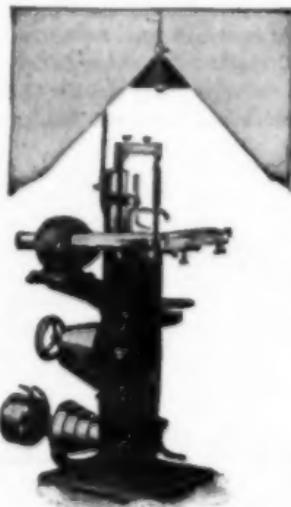
The $6\frac{1}{2} \times 6\frac{1}{2}$ -in. square table tilts in four directions, also in four combinations of two angles for finishing corners.

In die making, pattern making, and for general filing where speed and accuracy count, the Robinson speeds up the work and saves filing costs out of all proportion to its moderate cost.

You'll be glad you looked it up. Write to—

**The Robinson Machine Wks.
HARTFORD, CONN.**

Rearwin Die Filing Machines



*Increases the Output
Decreases the Cost*

Does both large and small work. Any standard file $4^{\prime\prime}$ to $12^{\prime\prime}$ in length can be used. Stroke adjusted from $1^{\prime\prime}$ to $7^{\prime\prime}$. File releases on up-stroke. Shaft or motor drive gives rapid production and a uniform degree of clearance in your dies or other work where straight filing is required. Hack saws can be used for making templets.

Adjustable Speed Stroke & Table

*Descriptive circulars and
prices sent on request.*

W. D. Rearwin

341 Mill Ave., Grand Rapids, Mich.

Cochrane-Bly Company

Rochester, N. Y., U. S. A.

Manufacturers Of

Metal Sawing Machines

Made in five sizes, to cover every manufacturing requirement. Their thin milling saws combine high speed with the closest economy in high-priced steel.

Automatic Saw Sharpeners

Made in two sizes, for saws up to 15" and 24" in diameter. They grind and bevel at one operation the high and low tooth type milling saw.

Die Filing Machines

Made in two sizes, for the accurate filing of dies, punches, metal patterns, jigs and special gauges, and for filing duplicate parts requiring a close finish.

Universal Die Shaper

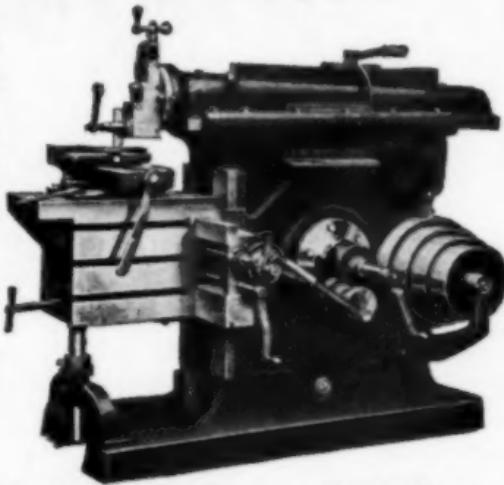
For die making and general tool room work. Operates both shaper ram and milling spindle at any angle.

When considering this class of equipment,
would appreciate being consulted.

SHAPERS

12", 14", 16"
Plain Crank,
16", 20", 25"
B. G. Crank,
either Cone
Driven or
through
Speed Box.

24", 28", 32"
Geared
Shapers of
the Belt Shift
type.



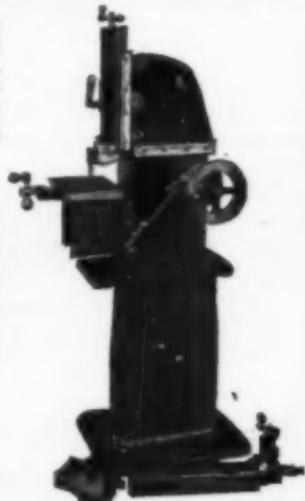
The Smith & Mills Co. Station B,
Cincinnati, O., U.S.A.

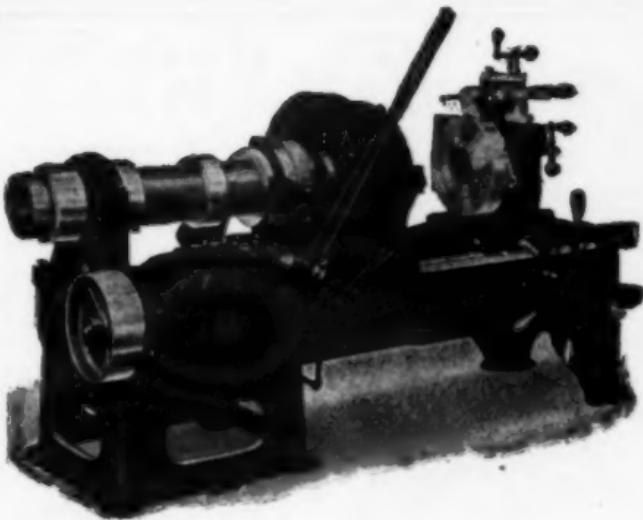
A Low-Priced, High-Production Combined Shaper and Slotter

Designed for small work only, and with the essential features of larger machines, this well-built, accurate tool is proving a big cost reducer on tools, dies, models, etc., and in shaping and slotting all kinds of light work.

The Improved "Rhodes"
with vertical attachment as shown, is in reality a two-in-one horizontal and vertical machine, covering a wide range of accurate machining. It is so low in price, compared with larger machines, and so efficient and economical, that every shop should have one.

Description and price?
Rhodes Mfg. Co.
Hartford, Conn.





**B. & K. Pipe Threaders
To Fit Your Exact Needs**

They Thread Pipe from $\frac{1}{4}$ to 18 in.

Having 17 styles and sizes to choose from, you can obtain machines that will do your work rapidly and at rock-bottom cost.

Every B. & K. has been tried out thoroughly in actual hard work, and this, together with our 32 years' experience, enables us to furnish machines that are best suited to the work in hand. All B. & K.s. are fitted with the famous Peerless Quick Adjusting Mechanism —giving instant adjustments to the thousandth of an inch without the use of tools.

*It is scientific to fit the machine to the work
And the result is a better profit on the work*

**Bignall & Keeler Machine Works
Edwardsville, Ill.**



Here's the Press

For Manufacturing
Great power backed by
sturdy construction enable

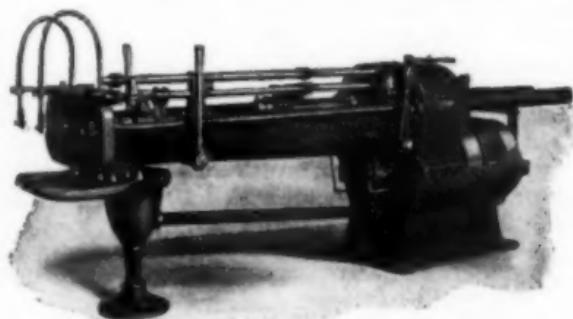
HIGH DUTY
ROCKFORD
PUNCH PRESSES

to stand the grind of hard
continuous usage. Made
in Straight Side and
inclinable types and
various sizes.

Write today for details

ROCKFORD IRON WORKS
ROCKFORD, ILL.

Broaching Machines And Broaching Tools



Our Famous Double Machine

The Most Complete Line In The World. We make our machines in 5 sizes and 11 types. *Send for particulars.*

THE J. N. LAPONTE CO., - - - New London, Conn.



Steel Lockers are Permanent

Sanitary—Fire-Proof—Safe—Economical

Lockers are a permanent need and should be of permanent construction. Terrell's steel lockers not only meet this condition, but they also meet every legal and sanitary requirement. Furthermore, they save room and insurance expense, and will render first-class service as long as your plant stands.

Steel lockers cost a little more to begin with than wooden cupboards, but in the end they are as much cheaper as they are more satisfactory. Their superiority in every way is much like that of the cement walk over the wooden side-walk.

We have given special study to the locker problem from the manufacturers' standpoint, and have some data that you will find of interest and value.

Glad to give advice or information, or to submit estimates on your needs, without obligation to you.

Terrell's Equipment Co.

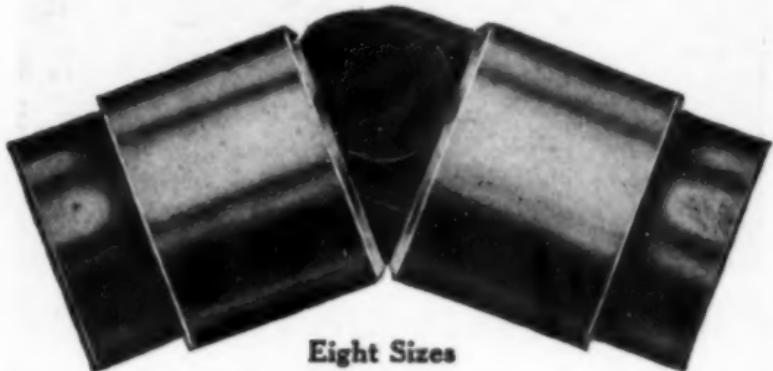
Hall & Division Sts.,

Grand Rapids, Mich.

Also ask about our Steel Bins, Shelving and Racks.

What Is---

- the size of your shafts to be connected?
- the r. p. m. at which joints will turn?
- the angle at which they will run?
- the total horse power to be transmitted?
- the machine or tool you wish to drive?



Eight Sizes

Universal Joints

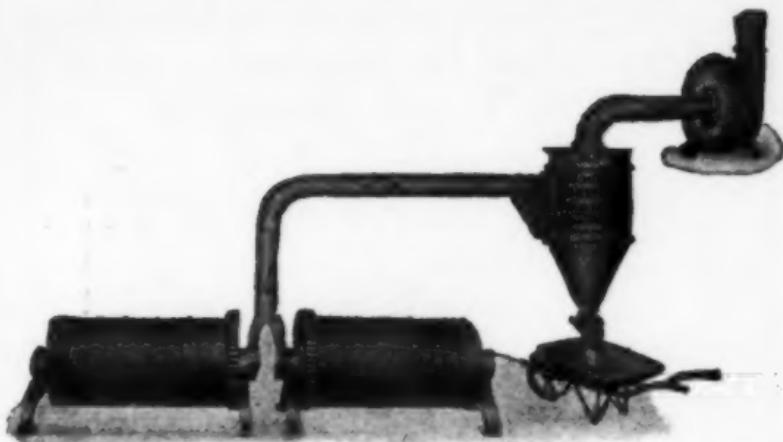
Of great strength, that transmit a Thrust or Tension without play or looseness in any direction

All wearing parts are case-hardened. There are no sharp corners or edges to cut, scrape or wear the parts. There are no screws or small parts to get loose. It is all so nicely fitted that the Gray & Prior Universal Joints give long, hard usage without play or looseness in any direction.

For adjustable gang drills; for wood boring machines; for the moving feed shafts of milling, grinding or boring machines—in fact, for all purposes where Universal Joints may be used, one of our eight stock sizes usually can be adapted with splendid results; and where they cannot, we will furnish you with what you want within the shortest reasonable time.

*Write for Special Circular of our Style A. Joints
For specific information, please answer above questions*

GRAY & PRIOR MACHINE CO., Hartford, Conn.



Nearly Half The Power Saved

With Morse Dust Collectors

As told to Knickerbocker:

"This reduction in horse power is a great thing. Today we are operating the entire department with two 10s and one 5, making a total of 25 electric horse power, and before the installation of your Collectors we used 45 h. p. to do the same work."



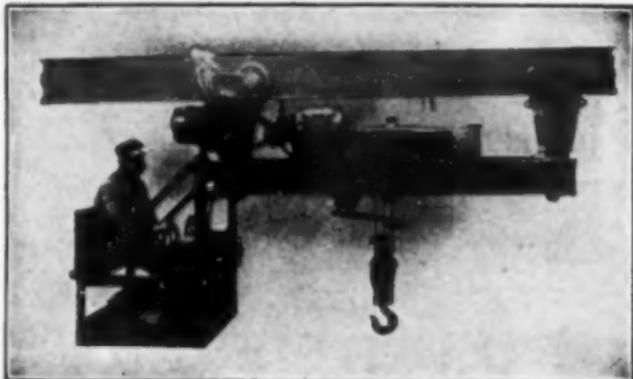
Name of customer on request.

That's the experience everywhere—in big plants and small ones, and with all kinds of heavy and cutting dust—the Morse saves power and repairs, assuring big economy and long life. With the Morse the dust is collected and automatically discharged before the air reaches the fan, hence there's no cleaning out by hand.

*Full information and copy of our
Booklet on request*

The Knickerbocker Company
Jackson, Mich.

Mono Rail Hoists and Over Head Track Systems



A 5-ton hoist operated from cab or floor for transferring material from one building to another, unloading cars, general yard work, etc. Mono Rail Hoists and trolleys of all types.

Nothing too large or too small for our careful, prompt attention.

The Euclid Crane & Hoist Company
Euclid, Ohio

Lifts and Lugs Heavy Stuff

Safely—Quickly—Economically



Doing the work of from 6 to 10 men, carrying castings and machinery around in *safety*, are the daily stunts of Canton Cranes—

**The Handiest Tool
In the Shop**

Let us send one on 30 days' free trial so you can see how well it performs on your work. Made in several regular and special sizes.

Economize by ordering a Canton

CANTON FOUNDRY & MCHE. CO., Canton, O.

This is An Inexpensive
Cutter, Reamer and Drill Grinder

It has Generous Range and Capacity
The Price is Within Your Reach

Don't delay—look it up now!

Particulars, prices, etc., sent on request.



Style BX

We also make

Drill Grinders—Surface Grinders—
Lathe Center Grinders—Universal
Grinders—Tool Grinders—etc.

Wilmarth & Morman Co.

1185 Monroe Ave., Grand Rapids, Mich.

Combination Disc Grinder & Roll Sander

"Best machine ever built for pattern shop use"

The No. 20 Gardner combines both the disc wheel and the sanding roll into a compact, sturdy and accurate machine. The disc wheel is used for producing flat surfaces and external curves; the sanding roll perfects internal curves which have been roughed out on a band saw.

Both this disc wheel and the roll remove stock with extreme rapidity and accuracy. With this machine at hand your apprentice boy can do, with greater speed and quality, much of the work formerly done by your best man. A Gardner No. 20 soon pays for itself in any modern pattern shop working four or more men.



Get the details today

Gardner Machine Co.

The Disc Grinding Authorities

Beloit, Wisconsin

Largest Disc Grinder Builders in the World



The

Greenfield

For Special Work, Tools, Jigs, etc.

This Universal Grinder is just the machine needed in many of the shops engaged in equipping for the manufacture of special lines. It is an all-around grinder and will handle about any kind of a job that comes within its range.

It will turn out accurate, dependable work. Also, we believe we are perfectly correct in stating that we furnish this machine with a larger and more complete set of attachments than can be had for any grinder selling at anything like the same price.

We also build Plain Grinding Machines for production work

Greenfield Machine Company
Greenfield, Mass., U. S. A.

Tucker's Safety First

Style G



Closed

Oil Hole Covers
Require but one hand to pump in the oil. Adapted to all kinds of mechanism having oil holes leading to a bearing.

*Send for Catalogue
Oil Hole Covers
and Compression
Grease Cups*



Open

Style E



Style C



Style F. Drive



Style A



Style D



Style B

Compression
Grease Cup



Rotary Head



Open

W.C. & F.C. TUCKER, Hartford, Conn.

Immediate Shipment

A. C. Motors

We have in stock for quick shipment a few new squirrel cage induction motors of the following sizes—

3 Phase 60 Cycle 220 Volts

Horsepower	Speed
$\frac{1}{2}$	1800
$\frac{3}{4}$	1800
1	1800
$1\frac{1}{2}$	1800
2	1800
2	1200
3	1800
3	1200
5	1200
$7\frac{1}{2}$	1200
10	1800
10	1200

3 Phase 25 Cycle 220-550 Volts

Horsepower	Speed
1	750
2	1500
2	750
3	750
6	1500
$7\frac{1}{2}$	1500
$7\frac{1}{2}$	750
10	1500
10	750
20	1500

We also have a few 3 phase 60 cycle 440 volt motors. Write or wire for prices and bulletins.

Reliance Electric & Engineering Co.
1050 Ivanhoe Road, Cleveland, O.

Hydraulic Presses

Many Styles
Many Sizes



Type B

Hand, Power, or Both

Work much easier than geared presses
Work much easier than screw presses
Work much quicker than screw presses

NOTICE the gap in crosshead, which allows an axle or a shaft to extend upwards any distance, while a down push press has only a limited distance downwards.

Type B Presses

Any capacity from 10 to 100 tons.
Widths between posts 12", 18",
24", 30" and 36".

*We make Forging Presses for many purposes
from 10 tons to 2000 tons. Write to us.*

Lourie Manufacturing Co.
Springfield, Ill.



No. 24 Press

Efficient Equipment

Atlas Presses

for building and repairing automobiles and general machine shop operations requiring pressure up to 25 tons and centering capacity up to 38 inches. For driving mandrels; bending and straightening, broaching, embossing with dies, setting bushings and many other every day manufacturing jobs, there is an Atlas Press. All sizes for all purposes. *It will pay you to investigate.*

Atlas Press Co.
317 N. Park Street,
Kalamazoo, Mich., U. S. A.

A 20-Ton Press



for

\$48.00

Note the wide, roomy
construction

Leverage
1500 to 1

WEAVER 20-Ton Forcing Press

Heavy 5-in. channel steel frame; hand wheel 15 inches in diameter, carried upon ball bearings. The thrust of the screw is directed against heavy Bronze Thrust Bearings. Screw 2 inches in diameter with 3-pitch Acme thread. Range of movement, 12 inches. *The screw does not revolve.*

The bolster has extreme adjustment of 48 inches. The width between frame uprights is 32 inches, height 74 inches, floor space 36 x 36 inches, weight 425 pounds.

Net Price Complete With
Equipment **\$48.00**

Weaver Manufacturing Co.
2179 So. 9th Street, Springfield, Illinois

Internal Keyseater

For Use

In The Drilling Machine

The tool is fitted with a rotary high speed steel cutter that mills internal keyseats in one cut. It is made in 20 different diameters. Mills keyseats in places where shaper, planer, lathe and keyseating machine can't reach. There is use for this tool in shops large or small.

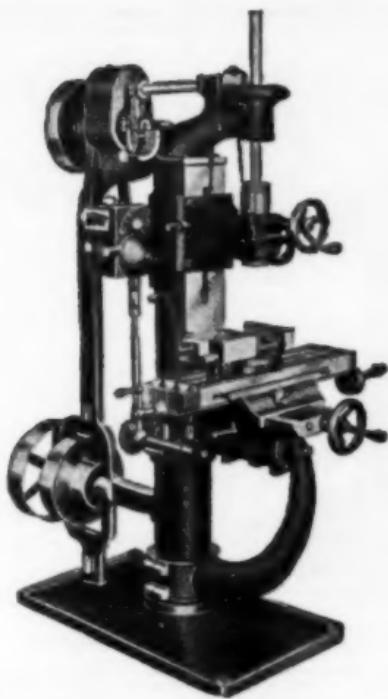
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National Machine Tool Company

2270-2272 Spring Grove Ave., - Cincinnati, Ohio



Do You Use Air?



**Knight Milling and Drilling Machines
Equal 3 Ordinary Machines
In Convenience and Capacity**

For milling, boring or drilling, or for any two or all three of these operations at a single setting, at almost any desired angle, these machines are time and labor savers of the first class.

They operate either parallel with the plane of the table, at a right angle to it, or at any intermediate angle. All adjustments are quickly and easily made. Knights save from 20 to 50% of time on hard machining of all kinds. Your choice of three sizes.

Our Booklet pictures some interesting operations

**W. B. Knight Machinery Co.
St. Louis, Mo.**



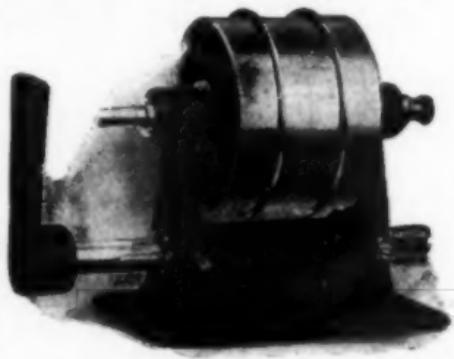
Burke Quality Excels on Fine Points

Machines of
Burke Quality
are never built
with any name
cast on the
frame but our
own—

**BURKE
CONNEAUT
U. S. A.**

For Sale Everywhere

This Tapping Machine Now Has Greater Capacity



Burke's
No. "D" Taps
5/8" Holes
in
Horseshoe
Steel

BUILT throughout with exceptional care, our several sizes give service in proportion. Accurate, rapid and convenient, they give solid satisfaction. No. "D" sells for \$45.

Send for details today.

The Burke Machine Tool Co., Conneaut,
Ohio



Drilling Machines of Tested Economy

Some large shops have found that it paid to give their time and care to long and careful efficiency and economy tests of the various makes of sensitive drilling machines.

As a result they selected the Henry & Wright as the best producer, and one plant alone now has over 2,300 Henry & Wright drilling spindles in operation.

Careful buyers everywhere are profiting by their experience, which has substituted facts for opinions.

Fall details and our Speed and Feed Chart free

The Henry & Wright Mfg. Co.
760 Windsor St., Hartford, Conn.



The Production Boss

“Don’t Care A Cuss”

What make or kind of tool he uses—he wants **SERVICE**; he must have **continuous PRODUCTION**.

SHRAPNEL Tools

The Kelly Adjustable Kind

THE KELLY REAMER CO.
CLEVELAND, OHIO, U. S. A.

C. W. Burton Griffiths & Co., London English Agts. 40 Domestic Agencies.

¶ If you have a thousand—or any number—of solid mandrels, you can't keep *many* of them busy *always*, can you? ¶ Now figure—*nine* Nicholson Expanding Mandrels will replace *completely* any number of solid mandrels you may have between 1" and 7"—and you will not have a lot of money tied up in rarely used sizes. ¶ Is there any question as to the relative profits from the two investments? ¶ A sample Nicholson Mandrel is yours for thirty days' *free* use, if you will write for it now.

W. H. Nicholson & Co.

117 Oregon St.

Wilkes-Barre, Pa.

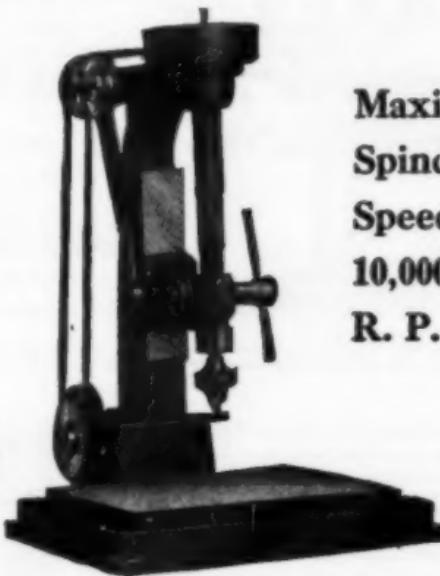
NICHOLSON
Expanding Mandrel

Save Money

with this

High Speed Drill

Patents
Pending



Maximum
Spindle
Speed
10,000
R. P. M.

Double Your Production on Holes
up to $\frac{3}{8}$ " in diameter

This machine is carefully and accurately built
to give the greatest service. Equipped with
Hess Bright Ball Bearings throughout.

Ask for Bulletin No. 502

Leland-Gifford Co.
Worcester, Mass., U. S. A.





The Well Known
H. G. Barr Line
of
Sensitive Drills

with one to six
spindles.

*Send for catalog
if interested*

Francis Reed Co.
43 Hammond St.
Worcester, Mass.

The Gang Radial has the quick response, the ease and freedom of movement and the marvellous precision of the human eye, as nearly as it is possible in mechanics, by long experience and painstaking care, to duplicate the perfection of Nature.



Our Radial Book tells
the how and why of it.
Ask for a copy.

THE W.M. E. GANG CO.
Cincinnati, O.



Cost Records

Prove the

Economy of

Taylor & Fenn

Fast Radials

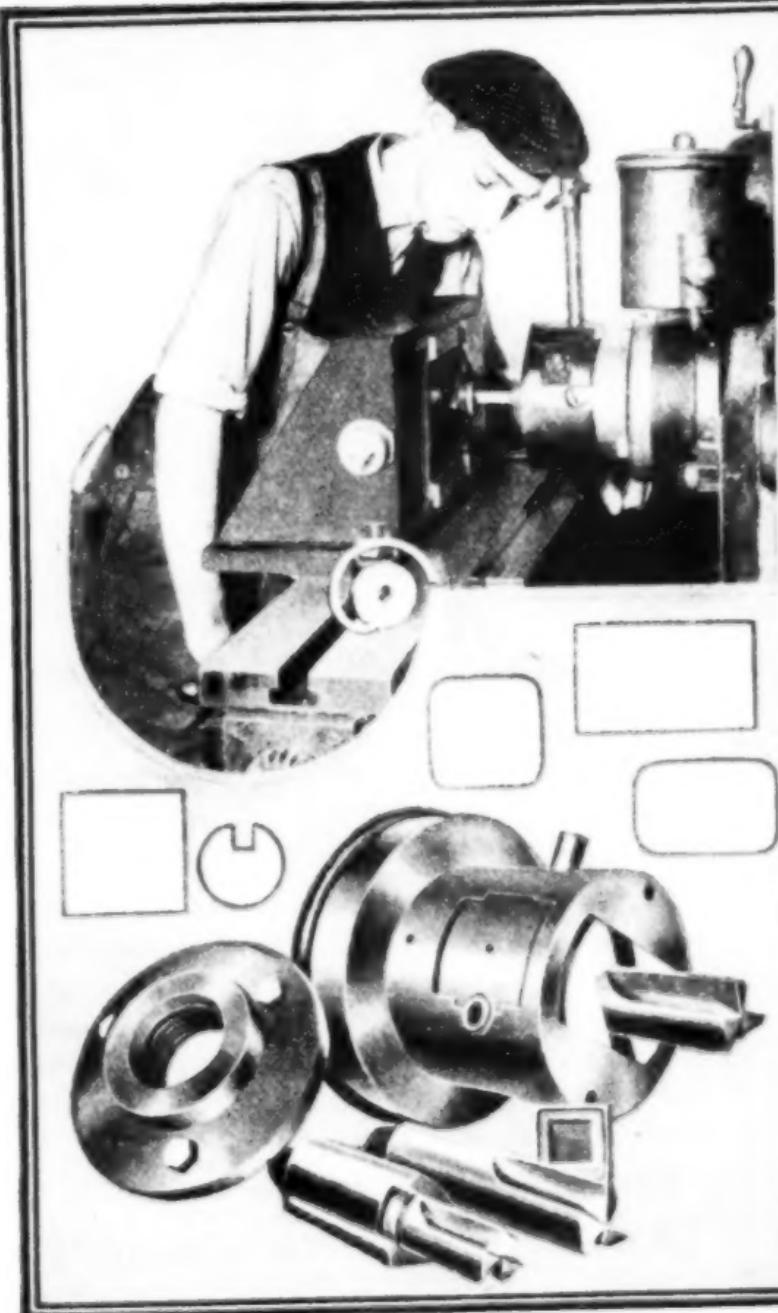
For Small Holes in Big Pieces

This improved 3-ft. radial is saving money for manufacturers and others who have drilling to do in heavy, hard-to-handle pieces. Some users have doubled and even trebled their capacity.

Embodying all the desireable features of our standard line, it combines the speed of the sensitive with the flexibility of the radial. It has automatic power feed, lever feed, high speed sensitive or tapping heads may be used, either singly or in combination. Its great adaptability gives it a wide range of usefulness.

Drilling records of this efficient and economical machine on request

The Taylor & Fenn Company
Hartford, Conn.



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90

Drill Your Square Holes

Instead of Broaching or Filing Them

Cheaper, Quicker and Fully as Accurate

The "Radbore" Head is not a machine, but a tool, and its cost is proportionate. Yet it does what no machine can do without it, in drilling square or rectangular holes in almost any kind of metal, including vanadium steel, with sharp or rounded corners, and either through or with flat bottoms, in one operation, at about one-tenth the cost of broaching.

The operator at the left is boring a square hole in a trimming die. Time, four minutes. To file-finish the same hole by hand formerly took one hour. The Radbore gives fifteen times the output; it does the work at one-fifteenth the cost.

The Radbore will make similar savings on your square holes. Glad to drill a sample for you, and tell you the time and cost, or to send booklet, or give any information desired. If you have square holes to make for any purpose, we can put you in the way of saving a large part of your present cost. Radbore head is attached to lathe or miller in a few minutes, and removed as quickly; machine is not tied up.

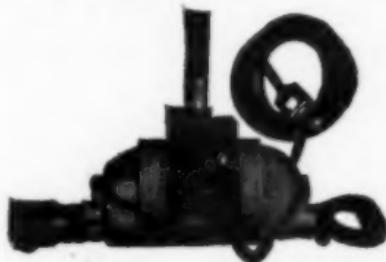
You want the booklet anyway; write for it

Radical Boring Head Corporation

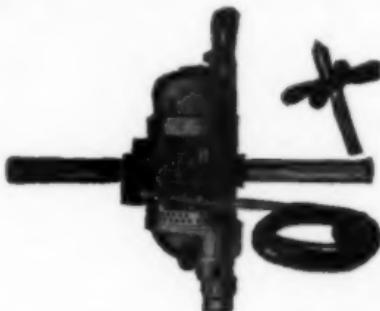
90 West Street, - - - - - New York City

Universal Motor Drills

For Use On Either Current



This drill is made in 3-16", $\frac{1}{4}$ ", $\frac{3}{8}$ " & $\frac{1}{2}$ " size. Gears run in grease. Motor air cooled, and is made to stand hard service. Sent on trial.



0 to $\frac{7}{8}$ Universal Drill

The motors used in these drills are Westinghouse motors, and operate on 25, 30, 40 or 60 cycle. 110 or 220 volts.

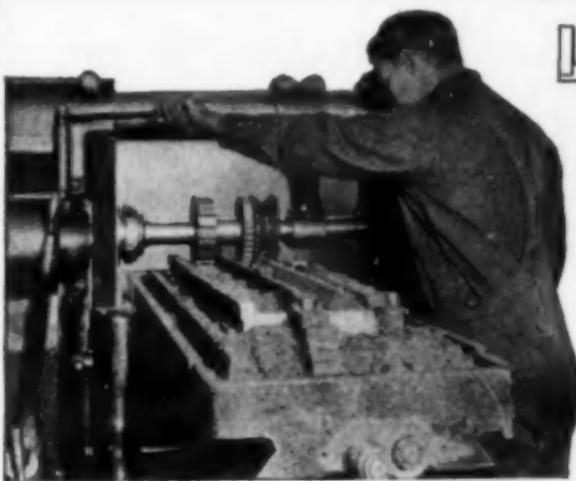
The U. S. Electrical Tool Co.

Cincinnati, Ohio

NEW YORK, 30 Church St.
BOSTON, - 12 Pearl St.

CHICAGO, 549 W. Washington Blvd.
ST. LOUIS, - 610 Commercial Bldg.

Stock carried at branch offices.



IBS

Brown & Sharpe Cutters Are A Known Factor

Man—Machine—Work—Cutter, these are the four big factors in production, and of these the Cutter is the hardest to judge on appearances. You buy on a name backed by performances. Then B. & S. Cutters are a production factor to be depended upon. Fifty years' experience proves it pays to give the smallest details expert attention.

A full line of Cutters is carried at our works, also at our Chicago Store, 626 Washington Blvd. Our regular line includes 45 styles and about 5,000 sizes, a standard cutter for every purpose.

*A free catalog will gladly be
sent on request.*



Brown & Sharpe Mfg. Co.
Providence, R. I.



Beaudry Hammers

For General Forging

Saves Fuel, Time
and Labor.

Cuts Forging Costs
in Two.

Belt or Motor Driven

Beaudry & Co., Inc.

141 Milk St.,
Boston, Mass.

In Your Tool Room!

This Little
Barr Pneumatic Hammer
alongside your tempering furnace will
enable you to do quickly the many
short jobs with which you must now
run to the blacksmith.

A remarkably simple and well built
tool which will pay for itself several
times a year! It uses very little air!

Will \$150 Stop You?

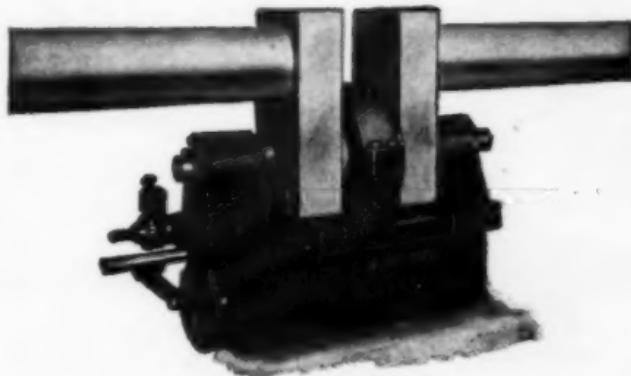
A Large Size For \$250
For Your Blacksmith Shop

Write now for circular H.

H. Edsil Barr, Mfr.
Erie, Pa.



Turning Center Crank Pins In Position Is Easy



With The Pedrick Portable Turning Machine

This adaptable tool is handy for any number of difficult jobs and is far from being a one-purpose machine of limited scope.

If you will send for our bulletin showing a dozen practical illustrations you will be convinced of its time and labor saving capabilities.

It earns money for the engine repairman, and saves it for the power plant owner.

Pedrick Tool & Machine Co.
3644 N. Lawrence St., Philadelphia, Pa.
Manufacturers of Cylinder Boring Bars, Portable Millers, Pipe Bending Machines, etc.

Pattern Shop Machinery

Special Prices if you refer to this ad.



Band Saws

Chicago No. 00 27 in. Wheels
" No. 0 32 " "
" No. 1 36 " "



Saw Tables

Chicago No. 5 Stationary Table
" No. 9 Tilting Table
" No. 10 "
Boring attachment if wanted.



Jointers

8 in., 5 and 6 ft. tables and guard.
12, 16, 20, 24 and 30 in., 7 ft. tables
and guard.

Trimmers, Lathes, Core Box Tools, etc.

Ask for full descriptions

Chicago Machinery Exchange

1214-1228 Washington Boulevard, Chicago

14,000 rivets headed for \$1.00 on a

Grant Noiseless Riveting Machine



A boy or girl at \$1.00 per day can head
14,000 rivets on bicycle mud guard braces
in ten hours.

Rivet heads formed by this machine
have a highly polished finish.

The machine is absolutely NOISELESS
in operation.

Breakage of castings or marring of sur-
face of articles being riveted, entirely elim-
inated.

We can furnish machines for belt or
motor drive for rivets up to $\frac{3}{8}$ " in diameter.

*Send us samples to be riveted and returned to you
Catalog?*

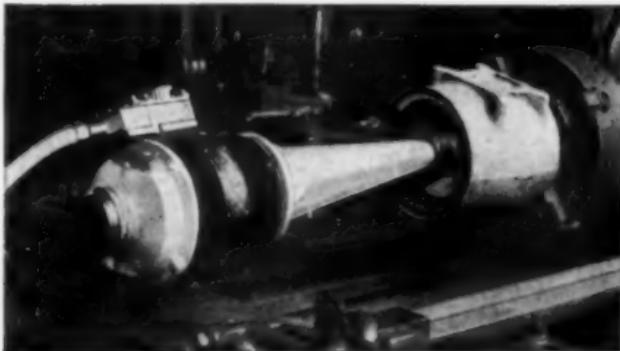
The Grant Mfg. & Machine Co.
C. E. Station, Bridgeport, Conn.

Announcing a New

Van Dorn

Internal Grinder

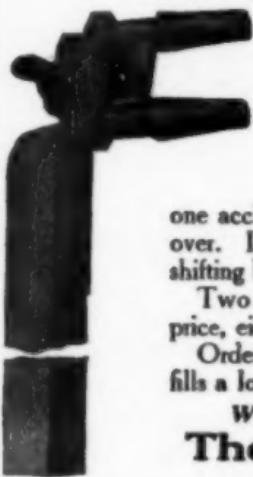
Built to meet a demand for a good internal grinder to swing a 4" diameter wheel minimum and a 6" diameter wheel maximum. Speed, D. C. 4500 R. P. M. A. C. 3400 R. P. M. $\frac{1}{3}$ horse-power. 14" Extension Arm. 90 per cent vertical adjustment on rocker arm.



**Now in stock for immediate delivery.
Write for complete details and prices.**

The Van Dorn Electric Tool Co.
Drills, Reamers, Grinders
2696 East 79th St. Cleveland, Ohio

Safety First In Shifting Belts



The three rollers, which bear against the sides and edge of the belt, make it impossible for this shifter to catch. It prevents a common form of accident, by making it impossible.

Does it pay? If it prevents only one accident a year, it earns its cost many times over. It is much cheaper to avoid accidents in shifting belts than to pay for them.

Two sizes, for belts 1 to 4" and 4 to 6"; price, either size, \$1.25 each or \$12 a dozen.

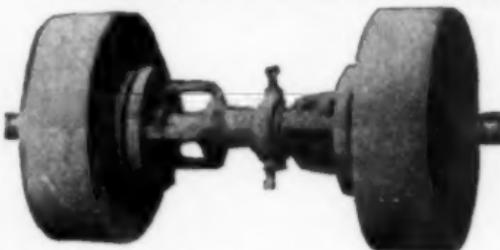
Order one or more for trial; you'll say it fills a long felt want.

We ship promptly. Write now.

The Ready Tool Co.
Bridgeport, Conn.

The Great Porter

Counter-Shaft Clutch Pulley



A genuine supremely perfect clutch pulley for line-shaft, counter-shaft and all general use.

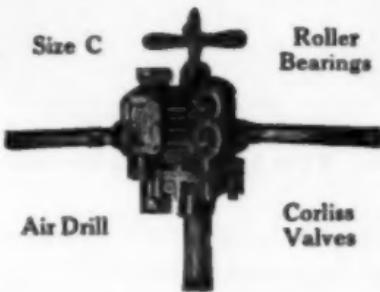
Pulleys are interchangeable—exchange for other size any time. Try a pair of these on your lathe counter-shaft; if not better than the other, better not buy a clutch at all.

Let us demonstrate to you by sending sample pair on approval. Your own conclusion is more satisfactory.

THE PORTER MACHINE COMPANY
"The Clutch Makers" Wooster, Ohio, U. S. A.

Thor Roller Bearing Piston Air Drills

Promote Shop Efficiency



Shop Efficiency is the key-word of success in all modern progressive shops. It means to perform a certain operation in less time than was formerly required, plus a higher degree of skill. This increases the quality of the product and decreases its cost of production.

This is exactly what Thor Tools will accomplish —they reduce the cost of your portable tool labor and increase the quality of the finished product.

Prove this to yourself at our expense

*All Thor tools shipped on trial. Write nearest branch
for particulars. Circular "W" shows complete line.*

Independent Pneumatic Tool Company

Chicago New York Pittsburgh Detroit
San Francisco Atlanta Montreal



No. 118 Iron Independent

LIMITS in machine work today are much closer than in years gone by.

CONSEQUENTLY you must have Chucks that can be relied on. The above Chuck is well adapted to this work. It is recommended as being as strong and rigid as any iron body chuck.

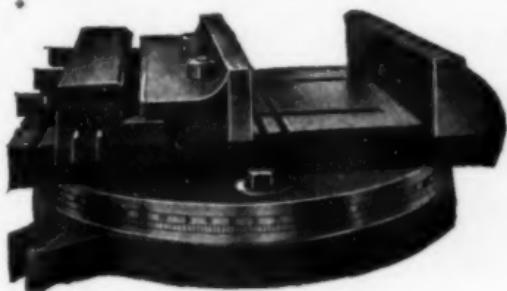
Either in three or four jaw style as you prefer

See the Catalogue for a Complete
Range of Sizes

Union Manufacturing Co.

New York Office, 26 Cortlandt St. New Britain, Conn.

Makers of a Complete Line of Chucks



With
Round
Swivel
Base

The Heavy Guns

In the Family of Planer Chucks

Light weight chucks, like light guns, have their uses. But Skinner Planer Chucks are not that kind. Like the heavy guns in the game of war, they are made for a purpose for which the other kind are useless.

They are heavier and stronger than any other planer chuck on the market, and are made in 16 sizes for use in railroad shops, in steel mills, or wherever the requirements are most severe.

Skinner Lathe Chucks, Drill Chucks, Drill Press Vises and Face Plate Jaws are also standard tools of ingenious design, careful construction and proven merit.

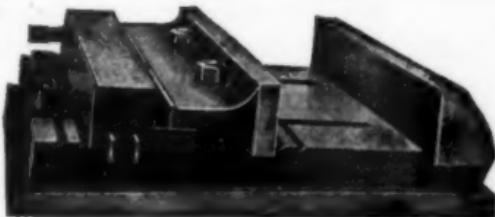
*You are on the firing line—we don't know where
Send your name and address for interesting data*

The Skinner Chuck Co.

New York Office:
94 Reade Street.

Factory and Main Office:
New Britain, Conn.

With
Square
Base



Increasing Sales! Why?



Patented Sept. 16, 1902

More Jacobs Improved Drill Chucks were purchased during December 1915, than during any other month of our phenomenally successful career.

Our first customers of thirteen years ago have since continuously, and increasingly purchased Jacobs Improved Drill Chucks.

Why?
Satisfied Customers.
Are You One?

Our illustrated catalogue H sent upon request.

The Jacobs Manufacturing Co.



We manufacture a great variety of
Lathe Chucks, Drill Chucks, Centering Chucks
Also
Portable Jaws for Lathe face plates and Machine tables.

Let us send you our Catalog

The Cushman Chuck Co.

Established 1862 Hartford, Conn.



"For taking a quick firm grip the 'Sweetland' beats all"

—Says one user

The Sweetland Chuck saves
you time in taking a grip—

In holding that grip—

In always being ready for any
job no matter how long or awk-
ward the piece to be gripped.

Why not try "Sweetlands"?
They are made in all styles and
sizes.

*Our new Catalog is ready.
Write for a copy.*

The Hoggson & Pettis Mfg. Co.
New Haven, Conn., U.S.A.



Blueprints

The Wickes

Continuous Electric.
Sells at **half the**
price. Uses **half**
the **current**
of others. Perfect prints
up to 48" in
width and of
unlimited
length.

Wickes Bros., Water St.,
Saginaw, Mich.

Store That Expensive Stock

Where it is Easy to Count, Assort and Handle



Pipe, Shafting and Bars

are mean things to handle and keep track of—usually in the way, often scattered here and there, and at times causing accidents—unless piled on

"The Handiest Racks."

Your expensive bar stock can be kept assorted on inexpensive "Handiest Racks" in a fourth the space, and handled in and out easily, quickly and safely.

*Foundry costs are advancing
Write now for present prices
You'll be glad you did*

Wm. S. Yohe Supply Co.
314 Lincoln Way, West. Canton, Ohio

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This department is exclusively for those desiring machine, press or die work on contract. Advertisements must be set in uniform style, as shown, and without other display, or any variation in arrangement or in kind or size of type. The heading must express, as nearly as possible, the particular sort of work wanted, in order that any facilities offered may be easily found. Rates: one-eighth page, three months, \$12; one year, \$40.

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We have complete facilities for stamping, drawing and forming of sheet metal. Our presses are best suited for medium and large size stampings. We are equipped for baked enameling, spot and acetylene welding. Send us sample, sketch or blue-print for estimate. **The New Britain Machine Co., New Britain, Conn.**

Dies, Tools—General Machine Work

We are equipped to render satisfactory service on all kinds of general machine work. No job too big or too difficult. Established 1876. **Chicago Die & Machine Works, 415 N. Carpenter St., Chicago, Ill.**

Brass Castings—Sand Blasted

Castings of every description made in brass, bronze, copper, aluminum and white metals, ranging in weight from 1 ounce to 1,000 pounds each. Specially equipped with power moulding machines for the handling of split, gated and plate patterns. All castings sand blasted. **Faunt Bros., 1555 Fulton St., Chicago, Ill.**

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Give us the amount of pieces required of each style. The larger the quantities the closer we can figure. We require absolutely accurate work in our own manufacturing departments, and our rigid inspection service is at your command. **Harvard Electric Co., 527 W. Van Buren St., Chicago, Ill.**

Screw Machine Products—Brass Castings

Right prices. Prompt deliveries. High-grade work. Send us samples or blue-prints for quotations. **Hill Pump Valve Co., 22 E. Kinzie St., Chicago, Ill.**

Brass, Bronze and Aluminum Castings

Castings of every description made in brass, bronze or aluminum. Brass finishing, screw machine and punch press products. Polishing and electro-plating. We are fully equipped to furnish complete brass and metal parts of every description. **Kelly Brass Works, 226-232 W. Ontario St., Chicago, Ill.**

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High-grade dies and tools, jigs, models, light and heavy punch press work in all metals. Accurate work and prompt deliveries. **Kineto Machine Co., Inc., 440 S. Dearborn St., Chicago, Ill. Phones, Wabash 3352 and 3353.**

CONTRACT WORK WANTED

Inventions Perfected

Years of experience in this work enable me to render you a satisfactory service. Special and automatic machinery a specialty. R. D. King, Consulting Engineer, 519 Moradnock Bldg., Chicago, Ill.

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Special brass work of every description, metal patterns and screw machine products. With a well-lighted shop, good tools and good mechanics, we believe we can satisfy you with our service. B. W. Pokorney & Co., 132-134 S. Clinton St., Chicago, Ill.

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We are well equipped to design and make special machines and tools; to handle experimental and model work, also punch and die work, and to manufacture patented articles on contract. Your inquiry is solicited. Pollard Engineering Co., 165-169 N. Jefferson St., Chicago, Ill.

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We solicit your inquiry for sheet metal stamping. Manufacturing a specialty. Walter L. Schultz, 29 S. Clinton St., Chicago, Ill.

Special and Automatic Machinery—Dies, Tools, Models

If it is dies, tools, jigs and models or special and automatic machinery that you require, we have the equipment and experience to take care of you in the best possible manner. Let us figure on your work. Strand Bros. Co., 617-631 W. Jackson Blvd., Chicago, Ill.

Light Manufacturing, Dies, Tools, etc.

Exceptional facilities for light manufacturing, and especially for the economical production of loose leaf metal parts, of which we make a specialty. We also do accurate work on dies, tools, etc. Our figures will interest you. Send samples or blue prints for estimates. Triple S. Machine Co., 1008 Wellington St., Chicago, Ill.

General Machine Work—Dies, Tools, Models Punch Press and Screw Machine Work

We are equipped to render the best of service in dies, tools, models, punch press and screw machine work. Specialties for bicycles and motor-cycles. L. Wilson Novelty Works, 222 S. Clinton St., Chicago, Ill.

Tools, Dies, Jigs, Fixtures and General Machinery

We make prompt deliveries and our work is guaranteed. McHugh Bros., 111 S. Water St., Rockford, Ill. (Successors to Winnebago Machine & Tool Co.).

CONTRACT WORK WANTED

Jigs, Dies, Tools—Stampings and Electro-Plating

Rockford Metal Specialty Co., Rockford, Ill.

Jigs, Fixtures, Machine Parts, Gears and Racks

We have facilities for special machine work, parts, jigs, fixtures and rapid process gear cutting, short rack. Geo. A. Schipper, Aurora, Ind.

Work for Large Lathes and Other Heavy Machine Tools

We have 36" engine lathe, 60" swing gap lathe, 4' radial and 42x42x8 planer our work does not keep occupied, and want contract work to keep them busy; also for smaller machine tools of limited time capacity. Would rent assembling space if desired. D. V. Reedy Elevator Co., Indianapolis, Ind.

Screw Machine and Milling Machine Products

Send us your blue prints and samples of screw machine and milling machine products to figure on. We are equipped to give you the class of work you want, just when you want it, and at the right price. J. Horat Company, 417-421 Ferry St., La Fayette, Ind.

High Grade Machine Manufacturing

We are equipped to manufacture high grade specialties and intricate machines, such as typewriters, adding machines, etc. Can improve a defective design, producing a machine that will work and sell. We especially desire problems of this kind. Large facilities for small stampings. Grand Rapids Brass Co., 66-90 Scribner Av., Grand Rapids, Mich.

Tool and Die Work

Every kind, for which we have the machinery and skilled labor to produce results. We are equipped also for special machine work. Our particular specialty is high grade service. Can you use that kind? Manhattan Brass Works, Grand Rapids, Mich.

Stampings

Can you use any of our surplus stamping capacity? We would like outside orders and will make tempting prices. Facilities modern and first-class, and our products will stand rigid inspection. Let us show what we can do. Send samples, blue prints or specifications. Hastings Mfg. Co., Hastings, Mich.

Sheet Metal Stamping and Manufacturing

We solicit your inquiries for light sheet metal stamping and manufacturing of specialties. O. D. Johnson Stamping Works, Batavia, N.Y.

CONTRACT WORK WANTED

Dies—Tools—Jigs

We are in position to do contract work on a 24-inch Warner & Swasey turret lathe. We also can furnish first-class iron castings. All work done by high-class, efficient workmen. Satisfaction guaranteed. Send blue-prints and samples for estimate to C. N. Cady Co., Canistota, N. Y.

We'll Make It—Your Metal or Wood Specialty

We have unusual facilities for producing specialties in both metal and wood. Experimental and model work, pattern making. Jigs, dies, sheet metal work. Write for details. Gas Engine & Power Co., and Charles L. Seabury & Co., Consolidated, Morris Heights, New York City.

Tools—Dies—Jigs—General Machine Work

Screw machine products. Efficient service and prompt deliveries. Send us your blueprints for quotations. Commercial Motor Car Co., Inc., Owego, Tioga County, N. Y.

High-Grade Castings—Machine Building

High-grade castings in iron, brass, bronze and aluminum for machine shops and manufacturers. Well equipped machine and pattern shops. Machine work and machine building our specialty. Inquiries solicited. Briggs-Shaffner Co., Shallowford St., Winston-Salem, N. C.

General Machine Work—Dies, Tools—Special Machinery

We are equipped to build machines of every description—sheet metal punches and dies—tools, models and jigs—long brake dies. Our object is high grade service. Send b. p. for estimate. Canton Machine Shop, 320 Rex Ave., Canton, Ohio.

Pressed Steel Shapes

With our heavy hydraulic presses, we can handle any pressed steel shapes using $\frac{1}{4}$ -in. stock or heavier at a very reasonable production cost. Our modern facilities also enable us to do plate or structural work upon a basis of close economy. Your inquiry is solicited. Greenville Steel Car Co., Greenville, Pa.

Pressed and Stamped Steel Parts

It will pay you to let us figure on such pressed, stamped or drawn metal articles or parts as you may require, be they made of steel, aluminum, brass or copper. Our 15-acre plant at your disposal. Get the benefit of our "Knowing how since '81". Send samples or blue prints for estimate. Geuder, Paeschke & Frey Co., Milwaukee, Wis., 1325-1700 St. Paul Av.

Steel Novelties

We are well prepared to manufacture your steel novelties and devices at bed-rock cost for satisfactory work. Have a complete electro plating, galvanizing and tinning outfit. We make necessary dies from your drawings, also small brass castings. Work shipped on approval. Write for estimates. Two Rivers Plating Works, Two Rivers, Wis.

Want More Orders?

They are to be had for special contract work in machining, stamping, forging, casting, welding or any department of machine manufacturing. The problem is merely to bring the capacity and the demand for it together. If you have the idle capacity, and want work for it, the "Contract Work Wanted" department of the Tool List will help you to get in touch with machine-making plants everywhere in the United States. Its circulation among American metal working plants is country-wide. There is no other available means by which you can reach so many.

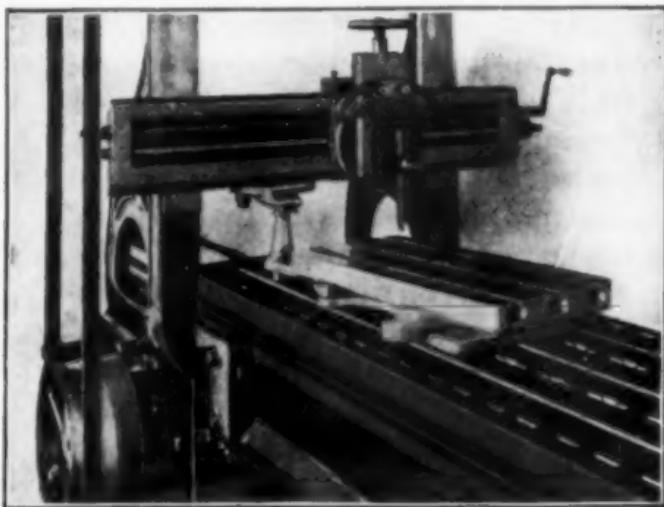
Don't let your equipment stand idle. That costs money—a lot more than it will cost you to find work for it. Write me for further information, and for a copy suggestion, which I shall be glad to make without cost or obligation.

A. H. Hitchcock, Publisher

Hitchcock's Machine Tool List
1220-1235 Caxton Building, Chicago, Ill.

Underwood's Portable Tools

Save Time and Reduce Costs



This Radius Planer Attachment

is a simple device that does absolutely accurate work on all kinds of links, blocks and circular work. It has no superior for planing curves of any radius, and perfectly parallel curves, and it's all done on an ordinary planer. A scale for setting to any radii furnished when desired.

We have been originating and building labor saving machinery for nearly half a century. Our line of Portable Tools includes:

Millers, circular planer tools; radius planers; rotary planers, machines for truing eccentrics, facing domes, arms for facing cylinder flanges; rotary flue cleaners, armature and axle bearing borers; pipe benders; locomotive cylinder borers; crank pin turners; reflex water glass grinders; rail saws; motors, etc., Write for catalog.

H. B. Underwood & Company

1016-22 Buttonwood St., Philadelphia, Pa.

Second-Hand Machinery.

Lists of Second-Hand Machinery, either for sale or wanted, set in uniform style, will be published under this heading at the rate of **40 cents a line**, across the page, each issue. Minimum charge, **\$4.00**. Sub-headings are counted as one line, but the name and address of advertiser are not included in the space charged for. No display in this department.

Write directly to the parties offering the machines for sale for prices and full descriptions. If you do not find listed what you require, use the post card inclosed with each book to make known your wants to the publisher.

FOR SALE BY

The Bicknell Mfg. & Supply Co.

Janesville, Wis.

Automatics, Cleveland, (8).
Automatics, Hartford, (12).
Boring mill, 36", two heads.
Engine, hi-speed, 12x12.

Engine, Corliss, 14x32.
Engine, Corliss, 22x42.
Lathe, 24"x16".
Punch and shear, double end.
Power, Machinery and Tools.

FOR SALE BY

Richard A. Schultz,

1511 N. Halsted St., Chicago, Ill.

Drill press, Allen ball bearing, 12" table.
Drill press, Hoefer, 16" table.
Milling machine, No. 2 Cincinnati.
Press, 20-ton Toledo, 2" stroke.
Press, 30-ton Toledo, 2 $\frac{1}{2}$ " stroke.
Press, 50-ton American Can Co., 5x3" stroke.
Screw machine, Garvin, 1 $\frac{1}{2}$ " hollow spindle.
Several good links, emery wheels, saws, tools and other machine shop accessories.

FOR SALE BY

F. H. Kappen & Son, Agents,

93 W. Water St., Milwaukee, Wis.

NEW AND USED MACHINERY.

Air compressor, 6x6x7 Clayton,
steam driven.
Blowers, pressure.
Cutting-off machine, Burke & Burr.
Dividing head, 10" and 12" Owen.
Drill presses, sensitive.
File sharpener, American.
Lathe, 18"x8' Mueller, comp. rest.
Lathe, 18"x8' Wheeler, comp. rest.

Planer, iron, 26"x26"x7'.
Press, geared, No. 6 Model H.
Perkins, 2" stroke.
Press, geared, No. 6 $\frac{1}{2}$ Perkins, 4" stroke.
Press, geared, Model H, Perkins,
6" stroke.
Screw mchs., 4" Pratt & Whitney.
Turret lathe.

FOR SALE BY

Badger-Packard Mch. Co., 72-74-76 W. Water St., Milwaukee, Wis.

DRILLING MACHINES.

20" Barnes, geared.
24" Mechanics, sliding head.

26" Mechanics, sliding head.

LATHES.

14"x6' Wood & Light, r. and f. rest.
14"x6' Lodge & Davis, plain rest.
14"x6' Lodge & Davis, plain r., c. s.

18"x8' Blaisdell, compound rest.
21"x18' Pond, compound rest, c. s.
38"x20' New Haven, comp. rest.

PUNCH PRESSES.

No. 2 Consolidated, o. b., inc., (4).
No. 2C Consolidated, o. b., inc.

No. 3 Michigan, o. b., inc.

MISCELLANEOUS.

Grinder, disc, No. 3 Besly.
Hack saw, No. 1 Q. & C.
Hack saw, Sterling.

Hack saw, Hoefer.
Punch press, No. 3 Stiles.
Punch & shear, No. 52 S. M. & W.

SECOND-HAND MACHINERY

FOR SALE BY

The Strong, Carlisle & Hammond Co., Cleveland, O., Detroit, Mich.

ENGINE LATHES.

14" x 6' Blaisdell, c. r.	20" x 8' Walcott & Wood, c. r., 4 s.c., single back geared, (2).
14" x 6' LeBlond.	25" x 9' New Haven, c. r., s. p., h. s.
14" x 6' Ames, r. & f. rest.	26" x 10' Barker & Chard, c. r., h. s.
14" x 6' Flather, c. r. & t. a., s.p., h.s.	30" x 12' Blaisdell, c. r., h. s.
20" x 8' Walcott & Wood, c. r., 3 s. c., double back geared.	36" x 16' Fifield, c. r., s. s.

FOX LATHES.

14" x 6', square arbor, set-over tail-stock, (2).	18" Springfield, set-over turret.
	20" American, universal turret.

TURRET LATHES.

18" Lodge & Davis, g. f. hd., automatic chuck.

MILLING MACHINES.

No. 8 Brainard.	Garvin hand miller.
No. 12 Brown & Sharpe, plain.	

UPRIGHT DRILLS.

20", w. & l. fd., s. b., (4).	20" b. g. & p. f., s. b., (4).
24" heavy duty Baker Bros.	24" sliding hd., b. g., p. f., (2).
21" Kokomo high-speed, bronze bushed, b. g. & p. f.	Sensitive drills, (6).

MULTIPLE DRILLS.

Baush 12-spindle, 1" capacity.	Pratt & Whitney, 12-spindle.
3, 4 and 6-spindle sensitive, (3).	5 spdl. Detroit horiz., semi-auto.

GEAR CUTTERS.

24" Fellows gear shaper.	24" Gould & Eberhardt, auto. spur.
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PLANERS.

24" x 24" x 8' Pond, spur.	26" x 26" x 6' Kidd, spur.
24" x 24" x 6' Wheeler.	30" x 30" x 12' Cleveland open side, one rail and one side head.
30" x 30" x 8' American Tool Works, spur, single head.	

PRESSES.

No. 205 Toledo, double crank.

BORING MILLS.

60" Industrial, sgle. hd., vertical.	36" Barrett, horizontal, with 5" bar.
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GRINDERS.

Warner & Swasey cock grinders, (2).	Pratt & Whitney vertical surface grinder, with magnetic chuck.
14" & 20" wet grinders, (3).	

BOLT CUTTERS.

1 1/2" Acme, single head.	1 1/2" Wells, single head.
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SHAPERS.

6" Pratt & Whitney, plain crank.	20" Hendey, friction.
15" Walcott, friction.	24" Hendey, friction.
16" Smith & Silk, plain crank.	

SAWS.

8" No. 6 Cochrane-Bly.	No. 20 Lea-Simplex metal saw, (new).
12" Burke cold saw.	

SCREW MACHINES.

1 1/2" Cleveland automatic, 3-hole.	2" Hartford automatic.
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KEYSEATERS.

No. 00 Colburn, (2).	No. 0 Colburn (Baker) keyseaters, (2).
Morton, draw stroke.	

MISCELLANEOUS.

Bending roll, 8" x 18" Bertsch, heavy, triple geared.
 Grinder, planer type, 16" x 50" Springfield.
 Profiler, No. 2 Garvin, 2-spindle, Wesson drive.
 Pulley lathe, 36" Stevens, with boring attachment.
 Radial drill, 6' arm, Cleveland P. & S. Works.

SECOND-HAND MACHINERY

FOR SALE BY

The H. A. Stocker Machinery Co., 566-72 W. Randolph St., Chicago

TURRET LATHES.

12" Windsor, plain head.

2x24 Jones & Lamson.

No. 2 Warner & Swasey hol. hex.

24" Niles, friction head.

24" Garvin turret boring lathe, back geared.

16" Foster, ring turret.

ENGINE LATHES.

14"x 6' Fairbanks, c. r. and taper.

14"x 6' Prentice, c. r.

14"x 6' Champion, c. r.

16"x 6' Prentice, c. r.

16"x 6' Sebastian, p. r.

16"x 8' Monarch, c. r.

16"x 8' Lodge & Shipley, pat. head.

16"x10' Greaves & Klusman, c. r.

18"x 6' Bradford, c. r.

18"x 8' Lodge & Shipley, pat. head.

18"x 8' Whitcomb-B., c. r. q. c. g.

18"x10' Bradford, c. r. and taper.

18"x12' American, q. c. g.

18"x12' Greaves & Klusman, c. r.

20"x10' Flather, c. r.

20"x10' Schumacher & B., c. r., taper.

21"x12' Bradford, c. r.

21"x12' New Haven, c. r.

22"x10' Dietz-Gang, c. r.

22"x10' Greaves & Klusman, c. r.

24"x16' Schumacher & Boye, c. r.

32"x18' Rahn-Larmon.

42"x28' American, triple gear.

SCREW MACHINES.

Pratt & Whitney No. 1, frict. gear.

Pratt & W. No. 1, inverted turret.

1 1/2-16" Hartford automatic.

24" Cleveland automatic.

4" Chicago automatic.

No. 2 B. & S. automatic.

No. 11 Garvin, hand.

BORING

MILLS.

52" Niles, car wheel.

30" Colburn, turret head.

42" Bullard, vert. 1 swivel & 1 tur. hd.

42" Bullard, vert. tur. hd. & side hd.

60" Colburn, vertical, 2 heads.

72" Colburn, vertical, 2 heads.

PLANERS.

Morton portable.

17"x17"x12" Whitcomb, crank.

24"x24"x4" New Haven, one head.

24"x24"x6" Pond, one head.

26"x26"x6" Pond, one head.

27"x27"x7" Wheeler, one head.

32"x32"x10" Pond, one head.

34"x34"x8" Betts, one head.

36"x36"x12" Cincinnati, 2 heads.

39"x39"x12" New Haven, one head.

40"x38"x14" Putnam, one head.

40"x40"x12" New Haven, one head.

44"x44"x12" Pond, two heads.

48"x36"x22" Hamilton, two heads.

GRINDERS.

Bealy No. 7, double disc.

Rivett No. 5 grinder.

MILLING MACHINES.

No. 00 B. & S. hand miller.

No. 23 Fox miller.

No. 13 P. & W. Lincoln type.

Becker No. 2 vertical.

Brown & Sharpe No. 1V plain.

Garvin No. 1 1/2 universal.

24x7 1/2x18 Oesterlein universal.

GEAR CUTTERS.

26" No. 3 B. & S. automatic for spur gears.

SHAPERS.

15" P. & W., crank.

16" Hendey, friction.

16" Kelly, crank.

16" American, crank.

16" Niles, back geared.

18" Barker & Chard, back geared.

20" Rockford, back geared.

20" Cincinnati, back geared.

20" Queen City, back geared.

24" Steptoe, back geared.

24" Rockford, back geared.

34" Walcott.

HAMMERS.

800 lb. Morgan, single frame, steam.

3000 lb. Toledo drop hammer.

PRESSES.

No. 3 Hoeft, open back.

No. 4 Walsh, open back.

No. 6 Garrison, open back.

Ferracute No. 133, double action.

Ferracute No. P3.

No. 95 Bliss, double crank.

No. 1 Mossberg & Granville.

No. 19 Bliss, open back.

No. 430 McDonald, double crank.

No. 2 R. & K., open back.

Nos. 3 & 77 Toledo, open back.

No. 3 Consolidated, open back.

SECOND-HAND MACHINERY

FOR SALE BY

Rumely-Wachs Machinery Co., 121 N. Jefferson St., Chicago, Ill.

If you have any machinery to sell or trade, consult us. The following is only part of our present stock. Does not show any new machines, and we continually have many cars on the way to us.

ENGINE LATHES.

11"x5' Shepard.	18"x10' Rahn Carpenter.
14-24"x5 $\frac{1}{2}$ ' Barnes extention bed, gap.	20"x14' Rahn Carpenter.
14"x6' LeBlond.	25"x12' Reed.
16"x8' Hamilton.	

SPEED LATHES.

11"x6' Diamond.	16" Spinning lathe.
14" Spinning lathe.	16"x6' Blount.

TURRET LATHES.

12" Meridian.	1" Pratt & Whitney screw machine.
14" Warner & Swasey.	1 5-16" Pratt & Whitney screw machine.
15" American.	

BORING MACHINES.

60" American boring mill.	Franklin horizontal boring machine.
6-8' Betts boring mill.	3 $\frac{1}{2}$ " bar Bement horizontal boring machine.
No. 16 Bissac horizontal boring machine.	

DRILL PRESSES—MISCELLANEOUS.

20" Prentice, w. & l.	2-spindle Henry & Wright.
20" Barnes, b. g., w. & l.	3-spindle Henry & Wright.
23" Barnes, w. & l.	4-spindle Dwight-Slate.
25" Barnes, w. & l.	3-spindle Barnes.
28" Sibley & Ware.	4-spindle Gardam.
28" Barnes.	2-spindle Rockford.
31" Barnes.	3 $\frac{1}{2}$ " Morris radial.
32" Hamilton.	3 $\frac{1}{2}$ " Roose & Mills.
1-spindle Henry & Wright.	No. 1 Barnes horizontal.

SHAPERS.

14" Hughes & Phillips, snagging.	20" Smith & Mills, b. g. crank.
16" Stockbridge, crank.	24" Gould & Eberhardt, crank.
20" Steptoe, crank.	

PRESSES.

No. 18 Bliss.	No. 3 Walsh.
No. 19 Crosby.	No. 3 V. & O.
No. 1 McDonald.	No. 4 American Can.
No. 1 Wold.	No. 69-N Bliss.
No. 3 Stiles.	No. 12-A Adriance.

KEYSEATERS.

No. 0 Mitts & Merrill.	No. 5 Mitts & Merrill.
No. 2 Mitts & Merrill.	No. 3 Baker, with compound circular table.
No. 3 Mitts & Merrill.	

MILLING MACHINES.

No. 11 Brown & Sharpe.	No. 4 Brown & Sharpe universal,
No. 4 $\frac{1}{2}$ Blake & Johnson, vertical.	older pattern.
20"x6 $\frac{1}{2}$ "x17" Osterlein, plain.	

PLANERS.

22"x22"x5' Wheeler.	32"x22"x8' New Haven.
24"x34"x5' Pond.	36"x36"x15' Woodward & Powell.
26"x26"x6' Flather.	

MISCELLANEOUS.

Bending roll, 9'.	Grinder, Springfield ring wheel face grinder.
Bolt cutter, 2" Acme.	
Gear cutters, No. 11 Brown & Sharpe automatic, (6).	Punch, 24" throat, Cleveland.

SECOND-HAND MACHINERY

FOR SALE BY

Marshall & Huschart Machinery Company,
17 S. Jefferson St. Chicago - **915 Chemical Bldg. St. Louis**

BOLT AND NIPPLE MACHINES.

No. 2 Adams bolt cutter.
 No. 2 Detrick & Harvey double
 head nipple machine.

1" Acme double head bolt cutter.
 1" National double head bolt
 cutter.

BORING MACHINES.

Barrett cylinder borer, 6" bar.
 48" swing Niles car wheel borer,
 for 36" wheels.

33" Niles car wheel borer.
 72" Niles vertical, two swivel heads.

DRILLS.

13" Davis & Egan, sensitive.
 20" Economic, upright, wh. & lever.
 20" Barnes, stationary head.

20" Mechanics, friction driven.
 21" Sibley & Ware, stationary head.
 21" Hoefer, stationary head, pwr. fd.

RADIAL DRILLS.

36" Gang plain.
 36" Niles plain.
 36" Fosdick plain, swinging table,
 cone drive, geared feed.

44" arm Alfred Box & Co., plain.
 5" Atlas plain.
 5" Prentice plain, speed box drive,
 excellent condition.

GEAR CUTTERS.

22" Gould & Eberhardt, spur and
 bevel.

16" Bilgram gear generator.
 Norris four-spindle semi-automatic.

GRINDERS.

Yankee drill grinder.
 No. 3 Vulcan emery grinder.

Safety Emery Wheel Co. wet
 grinder.

KEYSEATERS.

No. 2 Davis.

No. 2 LaPointe broaching machine.

LATHES.

16"x8' Bradford, compound rest.
 18"x8' Barker, compound rest.
 18"x8' Barker, compound rest.
 18"x8' Greaves-Klusman, compound
 rest, 4-step cone, fine condition.
 18"x8' Rahn, Mayer & Carpenter,
 compound rest, taper.

18"x14' Lodge & Davis, compound
 rest, chuck.
 24"x12' Peerless, compound rest,
 usual attachments.
 24"x12' Fifield.
 24"x16' New Haven, plain rest.
 36"x14' Putnam, compound rest.

SPEED LATHES.

10" Reed.
 11"x4' Douglas.
 10" Sheldon.

13"x8' Blount, with hand rest.
 4" Sterling polishing lathe.

TURRET LATHES AND SCREW MACHINES.

2"x24" Jones & Lamson flat turret
 lathes, cone drive, (3).
 4" No. 1 Hartford bench type auto.

1" Cleveland automatic.
 1" National-Acme four-spindle auto-
 matic.

PIPE MACHINES.

No. 1 Williams, 2" capacity.
 No. 204 Oster.

2" Jarecki.
 2" Murchey, pipe and nipple.

PLANERS.

24"x24"x6' McFarland & Nottingham.

SHAPERS.

14" Juengst.
 17" Juengst.
 18" Lodge & Davis, geared shifting
 belt.

18" Smith & Silk crank, with vise
 and countershaft.
 26-28" Walcott geared, shifting belt.

SAWS.

Atkins Quick Cut power hack saw.
 No. 1 Q. & C. power hack saw.

Williamson band saw.

MISCELLANEOUS.

Arbor press, No. 5 Greenard.
 Centering machine, 12" Whiton.
 Hammer, steam, 800 lb. Niles.

Punch, hand, No. 12 Lennox, 12"
 throat.
 Shear, hand slitting, Lennox.

SECOND-HAND MACHINERY

FOR SALE BY

Federal Machinery Sales Company, 12 N. Jefferson St., Chicago

DRILLS.

29" W. F. & John Barnes, back geared, complete.
23" W. F. & John Barnes, back gears, power feed, complete.
24" Aurora, sliding head, back gears, power feed, tapping attachment.
14-spindle Natco No. 25 multiple spindle drill, 2-speed head, 12"x18", capacity for 5-16" drill.

LATHES.

10"x25" Shepard, with compound rest.
13"x5' Fay & Scott, with turret on bed, pan, pump and tubing.
15"x6' Blaisdell, four-step cone, compound rest.
17"x8' Prentice, four-step cone, single back gears.
20"x10' Lodge & Shipley, five-step cone, q. c g., hollow spindle, comp. rest.
21"x10' Flather, five-step cone, single back gears, compound rest.
22"x12' Reed, four-step cone, single back gears, new.
27"x12' New Haven, with raising blocks to swing 48".

GRINDER.

8" Heald, bench type, power feed, magnetic chuck.

MILLER.

No. 2 Davis & Egan, back geared, plain.

MISCELLANEOUS.

Bending brake, steel, 6' Dresl & Krump, hand power, No. 14 gauge.
Hammer, 25 lb. Bradley, power feed.

Hammer, 55 lb. Williams-White.

Shaper, 14" Gould & Eberhardt, back geared.

Send for our complete list of tools.

FOR SALE BY

A. D. White Machinery Co., - 108-114 N. Jefferson St., Chicago

AUTOMATIC SCREW MACHINES.

5-16" Lavigne.
7-16" Cleveland, friction fd.
" Cleveland, friction fd.
" Cleveland, friction fd., (2).
" Cleveland, jigger feed.
" Hartford, (2).

1" Cleveland, friction jigger feed.

1" Lavigne, (4).

1" Hartford.

2" Hartford.

2" Hartford.

3" Cleveland, semi-auto.

ENGINE LATHES.

14"x6' Robbins.
16"x6' LeBlond.
16"x12' Beaman & Smith, taper.

18"x 8' Fitchburg.

28"x12' Fifield.

30"x14' Blaisdell.

DRILL PRESSES.

14" Mechanics.
20" Barnes.
24" Hoefer.
28" Barnes, sliding head.
28" Bickford, sliding head, (3).
30" Kerkhoff, sliding head.

32" Bickford, sliding head.

34" Barnes, sliding head.

6 spindle Fox sensitive.

8 spindle Valley City multiple.

10 spindle Pratt & Whitney mult.

12 spindle Baush multiple.

PUNCH PRESSES AND SHEARS.

No. 1 Toledo, o. b. i.
No. 2 American Can, o. b. i.
No. 2 Ferracute, o. b. i.
Nos. 2 & 4 Adriance.o.b.i.,(2 each).
Nos. 40 and 45 Crosby.

No. 6" Bliss, geared, double crank.

King power forcing press.

Niagara No. 242 power sq. shear.

No. 380 Toledo slitting shear.

Rock River rapid action punch.

MISCELLANEOUS.

Bolt cutters, 1 1/2 & 3" National, s. hd.
Boring mill, 42" Dawson, s. hd.
Grinder, drill, Yankee Style "B".
Grinder, disc, 18" Ransom.
Grinders, Landis No. 22 plain, (2).
Hammers, 40 & 60 lb. Bradley, cu.hlv.
Keyseater, 18" and 36" Morton, port.
Miller, No. 26 Brainard, plain.

Miller, No. 24 Brown & Sharpe, pl.

Oil gas generator, No. 3 American.

Pipe machine, 2" Jarecki.

Planer, 32"x32"x8" Betts.

Planer, 35"x35"x12" Niles, 2 heads.

Riveter, 3-16" Adt.

Shapers, 16", 18" and 24".

Tapper, No. 2 Garvin horizontal.

SECOND-HAND MACHINERY

FOR SALE BY

Prentiss Tool & Supply Co., New York, Boston, Buffalo, Syracuse.

BORING MILLS.

30" Warner & Swasey.
62" vertical, 2 heads.
No. 1 Barnes horizontal.

2-spindle Beaman & Smith horiz.
5" bar Beaman & Smith horizontal.
No. 1 Springfield spindle borer.

DRILLING MACHINES.

1-sp. Barr sensitive.
3-spindle Woodward & Rogers.
5-spindle Reed.
4-spindle Barr.
22" Aurora, sliding head.
28" Snyder, sliding head.
20" Davis, b. g. & t. s.

3 $\frac{1}{2}$ " Gang plain.
24" Fosdick radial.
5' American radial.
4' Universal radial.
6-spindle Gardam, adjustable.
12-spindle Gardam, adjustable.

GRINDERS.

No. 1 Brown & Sharpe, internal.
12" Bay State, piston ring.

18" Gorton disc grinder.
3" Yankee, twist drill.

LATHES.

11"x 8' Prentiss Bros.
14"x 6' Blaisdell, elevating rest.
17"x 8' Flather, c. r.
18"x 8' Reed, compound rest.
18"x 8' Rahn-Carpenter.

20"x 8' Lodge & Davis, plain rest.
22"x 10' Bogart, plain rest.
24"x 10' Porter.
42"x 16' Niles.
16"x 6' automatic threading.

MILLING MACHINES.

No. 2 LeBlond, plain.
No. 3 Kempsmith, plain.
No. 0 Van Norman, duplex.

No. 1 Van Norman, duplex.
No. 2 Becker, vertical.

PLANERS.

24"x 24"x 6' Pease.
24"x 24"x 8' Pratt & Whitney.
30"x 30"x 8' Gray.

36"x 36"x 12' Pond, 2 heads.
48"x 48"x 16' Pond, 3 heads.
52"x 42"x 12' Powell.

PRESSES.

P-2 Ferracut press.

| No. 52 V. & O.

PUNCHES AND SHEARS.

30" Niagara, power squaring.
25" Waiss & Roos.

| 10" Bement, 1"x 1".
18" Perkins.

SAWS.

4" Espen-Lucas.
No. 17 Higley.

| Robertson, power hack.

SHAPERS.

8" Pratt & Whitney.
15" Juengst, friction.
20" Kelley, crank.

| 24" Gould & Eberhardt, crank.
24" Hendey.

SCREW MACHINES.

2 $\frac{1}{2}$ " Cleveland auto.
18"x 6' Rivett heavy monitor.
Nos. 3 and 4 Windsor monitor.
12" Gisholt.

| 20"x 8' Fay & Scott.
34" Cleveland auto.
18" Hartford auto.
8" National-Acme.

MISCELLANEOUS.

Air compressor, 8"x 8" American.
Blower, pressure, No. 4 American.
Bolt cutter, 2" Merriman.
Bolt cutter, 1 $\frac{1}{2}$ " Reliance.
Broaching machine, No. 2 LaPointe.

| Bulldozer, No. 1 Rock River.
Keyseater, No. 0 Baker Bros.
Keyseater, No. 1 Davis.
Slotter, 12" Betts.
Tapper, 4" Baker Bros.

SECOND-HAND MACHINERY

FOR SALE BY

Wayne Machinery Co., Taylor St. & L. E. R. R., Fort Wayne, Ind.

Bolt cutter, $\frac{1}{2}$ " Acme.
Drill, 3-spindle No. 35-A Henry & Wright.
Drill press, 20" Canedy-O., w. & l.f.
Drill press, 14" Champion, l. f.
Drill, 4-sp., Fox Machine Co.
Grinder, drill & emery, W. & M.
Grinder, plain roll, 8x26" Diamond.
Grinder, wet tool, 12" Cady.
Lathe, speed, 10"x4" Reed.

Lathe, speed, 14"x8", J. A. Fay.
Milling mch., No. 2 P. & W., hand.
Milling mch., plain, No. 4 Garvin.
Milling machine, plain, No. 8 Brainard.
Planer, 36x36x8 Powell.
Riveter, No. 520 Prouty.
Tire welder, No. 4 L. & A.
Welding machine, No. 6-A Toledo
electric butt welder.

FOR SALE BY

New York Machinery Exchange, 50 Church St., New York, N. Y.

All in stock.

AUTOMATICS AND TURRET LATHES.

$\frac{1}{2}$ " Cleveland automatics, (3).
 $\frac{1}{2}$ " Cleveland automatics, (6).
 $\frac{2}{3}$ " Cleveland automatics, (4).
No. 5A Potter & Johnston automatics, (2).
2"x24" Jones & Lamson turrets, cone drive, (4).
3"x36" Jones & Lamson flat turrets, sliding head, 2-spindle, (2).
Fitchburg geared head Lo-Swing turret lathes, (2).
41" Gisholt turret lathe.
Bullard back gd., fric. hd. tur. lathe, $\frac{3}{4}$ " hole in spindle, $\frac{3}{4}$ " holes in turret.
Bridgeport back geared turret lathe, 2" holes in turret.
Springfield boring lathe, takes 7" stock through spindle.
Bridgeport turret lathe, $\frac{1}{2}$ " hole in spindle, $\frac{1}{2}$ " holes in turret.
Garvin forming machine, wire feed, 24" capacity, double cut-off rest.
18" Jones & Lamson turret lathe, friction head, back geared, bar equipment.
 $\frac{2}{3}$ " hole in spindle, $\frac{2}{3}$ " holes in turret.

SHAPERS AND PLANERS.

16" new Hanover crank shapers, (10).
21" new Hanover crank shapers, (10).
24" Putnam shaper.
24" Walter Bros. new shaper.
26"x26"x7" Bement planer.

30"x30x8" Pond planer, 2 heads.
36"x36"x10" Pond planer, 1 head.
36"x36"x12" Niles planer, 1 head.
36"x36"x12" Gleason planer, 2 hds.

HAMMERS.

25 lb. Bradley, cush. helve steam.
60 lb. Bradley, cushioned helve.

1000 lb. Morgan, steam.
1500 lb. Toledo, friction board drop.

PIPE MACHINES.

6" Curtis & Curtis, (4).
8" Curtis & Curtis.
10" Curtis & Curtis.

8" Saunders.
12" Saunders.

BOLT CUTTERS.

Detric & Harvey, $1\frac{1}{2}$ " capacity.
Merriam, 2" capacity.
National-Acme, 2" capacity.

Acme, $1\frac{1}{2}$ " capacity.
Acme, $3\frac{1}{2}$ " capacity.

LATHES.

14"x6" American, quick change gear.
15"x8" Cisco, quick change gear.
15"x10" Carroll-Jamieson, qk.chg.gr.
16"x6" Springfield, qk. change gear.

16"x8" Le Blond, quick change gear.
18"x10" Fay & Scott, qk. change gr.
19"x10" Hendey, qk. change gr., (2).
24"x16" New Haven, qk. chg. gear.

MILLING MACHINES.

No. 12 Cincinnati plain.
No. 3 Brown & Sharpe plain.

No. 9 Kempamith plain.
No. 2 Milwaukee universal.

MISCELLANEOUS.

Bending rolls, 24'.
Boiler rolls, 10'.
Boring mill, No. 5 Binsse horiz.
Boring machine, floor, Detrick & Harvey horizontal.
Cold saw, No. 3 Newton, rotary base, carries 32" saw.

Gear cutter, 30" Gould & Eberhardt automatic.
Gear cutter, 72" Bliss automatic.
Hydraulic press, 350-ton Hoe & Co.
Keyseater, No. 1 Mitts & Merrill.
Keyseater, No. 2 Mitts & Merrill.
Keyseater, heavy, No. 3 Colburn.

SECOND-HAND MACHINERY

FOR SALE BY

Niles-Bement-Pond Company, . . . 111 Broadway, New York.
Located at Chicago, Boston and New York.

LATHES.

Waltham bench lathe.	18" x 8' Barker & Chard, c. r.
12" x 5' speed lathe.	20" x 8' Hamilton, comp. r., q. c.
13" x 6' P. & W., taper, old style.	20" x 10' Hendey, q. c., taper.
16" x 7' P. & W., taper, old style.	40" x 16' Bement, c. r., old style.
16" x 8' P. & W., r. & f., old style.	36" Niles pulley lathe.
16" x 8' Von Wyck, q. c.	30' pit lathe, 220 v. motors.
16" x 8' Hendey, q. c.	

AUTOMATIC SCREW MACHINES.

8" Acme old style 4-sp. automatic.	8" Spencer single turret, auto.
5-16" Hartford 2-spindle automatic.	

BORING MACHINES.

36" Brown & Sharpe turret borer.	*
10' Niles, heavy pat., 220 v. motors.	

SHAPERS AND SLOTTERS.

10" Miles old-style shaper.	20" Hendey friction shaper.
12" Bement old-style shaper.	30" Morton draw cut shaper.
16" Stockbridge b. g. shaper.	24" Niles geared slotter.

PLANERS.

22" x 22" x 6' Harrington hd. planer.	30" x 30" x 6' Pond, 1 head.
24" x 24" x 6' Bertram.	30" x 30" x 8' Bertram, 1 head.
26" x 26" x 7' Niles, 1 head.	30" x 30" x 11' Niles, 1 head.
28" x 28" x 16' Miles, 2 heads.	36" x 36" x 12' Bertram, 1 head.

DRILLING MACHINES.

13" 1 spindle sensitive, 110 v. motor.	
14" 3 spindle Henry & Wright.	
17" 4 spindle gang, Jones & Lamson.	
20" plain, Milwaukee.	
21" Aurora, b. g., geared feed.	
30" & 36" Gould & Eberhardt, sliding head.	
No. 14 Pratt & Whitney multiple, 1" capacity.	
No. 10 Pratt & Whitney multiple, 1 $\frac{1}{2}$ " capacity, 10 spindles.	
No. 1 Pawling & H. horizontal, belt drive.	
No. 3 Pawling & H. horizontal, 220 v., d. c., motor drive.	
Dallet and Prentice portable drills.	

RADIALS.

24" Grant, semi-radial.	5' Niles, plain.
4' Barr, old-style.	6' Niles, semi-universal.

RAILROAD MACHINERY.

79" Pond driving wheel lathe.	Bement car wheel lathe.
Bement double axle lathe.	Niles hvy. car wheel lathe, like new.
Niles double axle lathe.	

BOLT CUTTERS.

14" Landis.	4" Acme.
24" National.	

GRINDERS.

12x96" Springfield.	P. & W. vertical, with, 220 v. motor
Automatic grinder, for saw blades.	drive.
18" Gorton disc grinder.	

MISCELLANEOUS.

Cut-off machine, 4 $\frac{1}{2}$ " Starr.	Press, No. 5 Greenerd, arbor.
Grindstone, 34", iron frame.	Rolls, 5"x8" hand power.
Hack saw, Millers Falls.	Saw bench, 54x34, tilting top.
Pipe machine, 8" Cox.	Saw, Higley cold, 7" capacity.
Press, No. C.1 Ferracute, inclinable.	

SECOND-HAND MACHINERY

FOR SALE BY

The Motch & Merryweather Machinery Company,

707-715 Lakeside Av., N. W., - - - - - Cleveland, Ohio

Branches: Detroit, Cincinnati, Pittsburgh.

Partial List of New and Second-Hand Machines in Stock—the latter are Rebuilt in our own shop.

BOLT CUTTERS.

No. 10 Wells Brothers, (new).

BORING MILLS.

42" Niles-Bement-Pond.

4" bar Bement-M, table type horiz.

60" Baush.

No. 1 Beaman & Smith hor. drilling, tapping and boring machine.

7" Betts.

DRILLS.

No. 2 Langelier, bench, (new).

24" Cincinnati-Bickford.

No. 00 Avey, bench, (2 new).

32" Aurora, sliding head, (2).

20" Superior, (6 new).

62" Pond.

21" Hoefer, (new).

40" Aurora.

28" Rockford.

Several small sensitive drills.

24" Aurora, sliding head.

DRILLS—HIGH SPEED.

No. 24 Foote-Burt, high duty.

DRILLS—MULTIPLE.

Three spindle Baush.

Six-spindle Moline No. 31, rail.

12" four-spdl. P. & W., sensitive.

No. 43 eight-spindle Gardam.

DRILLS—RADIAL.

42" Bickford.

4' Prentice, (2).

4" Fosdick.

6" American.

4" Dreses-Mueller.

GRINDERS.

No. 2 Blount, (new).

No. 2 L. & F., dbl. wheel wet tool.

No. 4 Blount, (2 new).

24" x 8" wheels, second hand.

14" Blount wet tool grinder.

Fellows twist drill grinder.

No. 4 Ransom grind.stands, (2 new).

Heald drill grinder.

No. 44 Ransom grind'g stand, (new).

No. 60 Heald cylinder grinder.

12" Ransom, unibersal disc, (new).

Yankee twist drill grinder.

HAMMERS.

35 lb. W. & W., power tire welding.

2000 lbs. Chambersburg Engr. Co.'s

1200 lbs. Morgan & Williams, double

single frame steam.

frame steam.

1200 lbs. Massillon, steam.

KEYSEATERS.

No. 1 LaPointe vertical, (new).

No. 2 Baker, (2).

No. 00 Baker keyseater.

No. 3 Mitts & Merrill.

No. 1 Davis.

LATHES.

13x54" American, c. r.

16" x 6' Harrington, c. r.

14" x 6" Star, plain rest.

18" x 8" Dietz & Schumacher, c. r.

14" x 6" Lodge & Shipley, c. r.

20" x 10" Lodge & Shipley, c. r.

14" x 6" Prentice, c. r.

MILLING MACHINES.

No. 1 U. S. hand miller, (new).

No. 4 Kempsmith universal.

No. Cincinnati universal.

Hendey, Lincoln type, (9).

PIPE MACHINES.

4" Jarecki, steam driven.

12" Curtis & Curtis, (2).

6" Saunders.

ARBOR PRESSES.

Various sizes Atlas arbor pr., (new).

No. 5 Eames mandrel press, (new).

PUNCHES AND SHEARS.

No. 4 Long & Allstatter double end punch and shear.

No. 5 Long & Allstatter double end punch and shear.

PLANERS.

16" x 16" x 4" Hendey, friction.

36" x 36" x 10' Pond, 1 head, rail bored

22" x 22" x 4" New Haven.

for extra head.

24" x 24" x 6" New Haven.

60" x 48" x 10' Gray planer, 3 heads.

30" x 30" x 6" Lodge & Davis, 1 head.

SECOND-HAND MACHINERY

Motch & Merryweather Machinery Co.,—Continued.

PRESSES.	
2-No. 2½ V. & O., (new).	2-No. 1 V. & O., (second-hand).
HACK SAWS.	
No. 2 Hoefer, (new).	No. 2 Wright metal band saw.
No. 5½ Nutter-Barnes cut-off, (new).	3½" Burr cold saw.
No. 15 Lea-Courtenay cold saw (new).	8" Atkins Kwick-Kut high duty
No. 2 Meyers hack saw, (new).	Paragon saw.
SHAPERS.	
18" Flather, single geared, power feed to head.	16" Walcott crank shaper.
TURRET LATHES.	
7" x 14" Potter & J. mfrg. automatic.	20" Hendey.
MISCELLANEOUS.	
Broaching machine, No. 3 Lapointe.	LATHES.
Filing machine, Colton, (new).	2" No. 5 B. & O., wire feed.
Slotting machine, 15" Betts.	Gear cutter, 36 Brainard automatic, spur and bevel.

FOR SALE BY

Neidow & Payson Co.

Automatic, 4" National-Acme.
Automatics, 30 of various sizes and makes.
Boring and turning mill, 100".
Drills, Nos. F & G Baker, (6).
Drill, 6-spindle Niles-B-P. Co.
Drill, 5' Niles radial.
Gear hobber, 18" Grant-Lees.
Lathe, 16" x 12" F. E. Reed.
We have four 22" x 8" heavy duty Plain

9 So. Clinton St., Chicago, Ill.

Lathe, 24" x 12' New Haven.
Lathe, 30" double wheel.
Miller, No. 12 Brown & Sharpe.
Miller, slab, 17".
Pipe machine, 6" Jarecki.
Planer, 40" x 12' New Haven.
Press, hydraulic, 100 ton, 11'.
Screw machines, hand, 14 sizes.
Shaper, double, 20" Cincinnati.
Turning Lathes, brand new, for immediate delivery.

FOR SALE BY

E. L. Easley Machinery Co., 551-557 Washington Blvd., Chicago, Ill.

GRINDERS.

18" No. 7 Besly, double disc.
24" Leland-F., double wet tool, (2).
26" No. 1 Diamond automatic, face.

1-sp. Davis & Egan cock grinder.
Oesterlein universal, c. & r.
6-sp. Milwaukee cock grinders, (2).

SCREW MACHINES.

1" Cleveland automatics, (5).
1½" Hartford automatics, (2).
1" Cleveland automatics, (2).

1½" Dresses, hand, f. g. hd.
2" x 11" Acme, g. f. head.
2" x 26" Acme, flat turrets, (2).

MISCELLANEOUS.

Boring mill, 30" Bullard.
Boring mill, 72" Bickford.
Boring mach., No. 1½ Barret, hor.
Boring mach., No. 1 Rockford, hor.
Borer, cylinder, Moline 2 spindle.
Bolt cutter, 1½" Acme, double head.
Brake, 8" Keene, hand power.
Centering mch., 1-sp., 5½" Whiton.
Centering mch., 2-sp., 8" P. & W.
Drill, 2-sp. gang, 20" Mechanics.
Drill, 24" Colburn D3, high duty.
Forming roll, power, 98" Bertsch.
Gear cutter, 20" Grant-Lees.
Gear cutter, 48" Brainerd, spur.
Gear cutter, bevel, 36" Brainerd.
Hammer, helve, 40 lb. Bradley.
Hammer, steam, 800 lb. Morgan, s.f.
Lathe, pulley, 60" Stevens.
Lathe, 38" x 19" Fish, c. r.

Lathe, 38" x 40" x 15' Harrington, gap.
Keyseaters, No. 2 Mitts & M., (2).
Keyseater, No. 1 Knowles horiz.
Miller, No. 9 Kempsmith, plain.
Miller, No. 2 LeBlond, plain.
Miller, keyseat, No. 3 Mitts & M.
Oil separator, No. 1 American.
Pipe machine, 2" No. 2 Bignal & K.
Pipe machine, 6" No. 6 Merrell.
Planer, 48" x 48" x 14' Pond, 1 head.
Planer, 42" x 42" x 10' Belmer, 2 hds.
Profilier, No. 3 H. Becker-B.
Punch press, No. 4 Walsh, o. b. i.
Radial drills, 24" to 5", (8).
Sprocket turning and boring machine combined, Baker Bros.
Sprue cutter, 10" Adt. power.
Welder, for boiler flues, Hartz.

SECOND-HAND MACHINERY

FOR SALE BY

J. L. Osgood,

Bolt cutter, double, 2" Landis.
 Bolt head shaver, 4-sp, Nat-Acme.
 Cutting-off machine, 2" Hurlbut & Rogers, motor drive.
 Drill, 20", screw and lever.
 Grinder, heavy floor, ring oiling, 18" wheels.
 Lathe, 16" x 10' LeBlond, quick change, compound rest.
 Lathes, 11" x 4' Reed, (5).
 Lathe, 15" x 6' Flather.
 Lathe, 16" x 8' Porter.
 Lathe, 86" x 30' Fitchburg.
 Miller, hand, Chicago.
 Miller, hand, No. 3 Garvin.
 Miller, Lincoln, Bement.
 Miller, Lincoln, Carter & Hakes.

45 Pearl St., Buffalo, N. Y.

Miller, semi-auto., 12" Cincinnati.
 Pipe machine, No. 7 Jarecki.
 Piston ring mach., Gridley auto.
 Press, pwr., Dodge 24" wheel, 1" throw
 Planer, 30" x 30" x 8' Flather.
 Planer, 40" x 40" x 9' Farrell.
 Saw, Espen-Lucas, 8" bar cap.
 Screw machine, No. 1 B. & O.
 Screw machine, No. 2 B. & O.
 Screw machine, 24" Gridley, single spdl., auto., piston ring attach.
 Shaper, 16" Ohio.
 Tapper, horizontal, 5-16" Garvin.
 Turret lathe, No. 1 P. & W.
 Turret, 2" x 24" J. & L., cone head.
 Wood turning lathe, 17" x 10', wood bed.

FOR SALE BY

Brown-McDonald Machinery Co.,

906-908-910 North Market Street, - - - - - St. Louis, Mo.

LATHES.

9" x 3' 3" Barnes, foot and belt power.
 11" x 5" Barnes, foot and belt power.
 12" x 5" Prentice, h. s., comp. rest.
 15" x 6" Sebastian, h. s., p. r.
 15" x 6" South bend, (new).
 14" x 5" Putnam, s. s., p. r.
 14" x 8" Fitchburg, s. s., p. r.

SHAPERS.

14" Steptoe, crank, single geared.
 16" Ohio, crank, single geared.
 DRILLING
 12" Allen, 1/2" capacity, single spdl.
 Barnes, 1/2" capacity, single spindle.
 Acme, 1/2" capacity, single spindle.
 King, 1/2" capacity, single spindle.
 Reed 4-spindle No. 33, 1/2" capacity.
 12" Burke, bench, 1/2" capacity, (2).
 No. 28 Western Chief, 1/2" cap., (2).
 20" Lodge & Davis, w. & l.
 New 20" Canedy-Otto No. 40.

PLANERS.

26" x 26" x 7" Whitcomb.

COMPRESSORS.

8x8 Star, sgl. cyl., dbl. a., belted.
 10x10 Star, with 10x10 vert. engine.
 950 cu. ft., Ingersoll, steam.

MISCELLANEOUS.

Bolt cutter, sgl. hd., 14" National.
 Cold saw, Q. & C.
 Drawing press, No. 70 Bliss.
 Friction saw, Kyerson, motor driven.
 Gear cutter, No. 11 Dwight Slate.
 Gear cutter grinder, No. 1 Gould & Eberhardt.
 Hack saw, No. 4 Economy.
 Hammer, upright, 90 lb, air cushion.
 Hammer, helve, 60 lb. Bradley.
 Milling machine, No. 3 Brainard.
 Milling machine, Lincoln type.

15" x 8' South Bend, (new).

17" x 8' Fifield, h. s., p. r.

18" x 6' Lathe & Morse, s. s., p. r.

18" x 6' Lodge & Davis, sliding turret.

20" x 12" Sebastian-May, h. s., p. r.

Fox brass lathes, (4).

16" Hendey, friction.

24" Barker, back geared.

MACHINES.

New 20" Champion, lever feed.

New 20" Champion, w. & l., (3).

New 20" Champion, w. & l., back geared and power feed, (3).

New 26" Aurora, s. h., back geared and power cross feed.

24" Bickford, sliding hd., w. & l., (2).

36" s. h., back geared, p. f.

20" Sibley & Ware, w. and l.

PLANERS.

30" x 30" x 9' New Haven.

6x6x6 Laidlaw-Dunn-Gordon steam driven.

20x20x13" Norwalk, straight line.

MISCELLANEOUS.

Pipe machine, 4" Bignall & Keeler.

Punch, single end, No. 6 Long & Allstatter, 24" throat, cap. 1 in 1.

Punch, double end, No. 2 Long & Allstatter, 24" throat, cap. 1" in 1".

Punch and shear, No. 4 Canedy-Otto, cap. 1 in 1, hand power.

Rolls, 8' Hilles & Jones, cap. 3".

Seamer, double, No. 2 Swaine.

Slab miller, 48" Cincinnati.

Steel brake, 4', new.

Steel brake, 8', new.

SECOND-HAND MACHINERY

FOR SALE BY

W. F. Davis Machine Tool Co., 32 North Clinton St., Chicago, Ill.
DRILLING MACHINES.

14" Mechanics, sensitive.

22" Barnes with power feed and back gears.

22" Mechanics, with sliding head, power feed and back gears.

26" Rockford with sliding head, back gears and power feed.

26" American with sliding head, back gears and power feed.

26" Fitchburg with sliding head, back gears and power feed.

28" Hamilton with sliding head, back gears and power feed.

RADIAL DRILLS.

36" Dreses, plain, cone drive.

42" Hamilton, plain, cone drive.

48" Niles, plain, cone drive.

ENGINE LATHES.

19"x 6' Economic heavy duty, 3 step cone for 34" belt, double back gears.

24"x10' Putnam, old style.

16"x 6' Flather.

12"x 6' American.

TURRET LATHES.

2"x24" Jones & Lamson, motor driven.

12"x6' Wells.

24"x26" Pratt & Whitney, geared head.

AUTOMATIC SCREW MACHINES.

12-New 1 $\frac{1}{2}$ " two spindle, for 90 days delivery.

MILLING MACHINES.

No. 4 $\frac{1}{2}$ Becker-Brainard, plain.

Newton Duplex with 72" table feed.

No. 7 Becker-Brainard, Lincoln type.

PLANERS.

41"x41"x13 New Haven.

SHAPERS.

24" Hendey, geared friction.

BORING AND TURNING MACHINES.

72" Niles with 2 swivel heads.

DRILL GRINDERS.

New Yankee Style "A".

ELECTRIC TOOL POST GRINDERS.

Willey No. 1, 110 volts, direct current.

MULTIPLE SPINDLE DRILLS.

10 spindle Pratt & Whitney, 1" drills, 4" circle.

12 spindle Gardam, 1" drills, 20" circle or 20" square.

PIPE THREADING AND CUTTING-OFF MACHINES.

12" Bignal & Keebler.

4" Stoever, (2).

6" Bignal & Keebler.

2" Jarecki.

ROTARY SLITTING SHEARS.

No. 407 Niagara with 24" throat, circle clamp & traveling table. Motor driven.

AIR COMPRESSORS.

10"x12" Curtis, two cylinder.

PORTABLE HYDRAULIC PRESSES ON WHEELS.

300 ton Elmes.

KEYSEATER.

Davis No 1.

PUNCH PRESSES.

No. 4 American Can Co.

WE SELL NEW AND SECOND-HAND:

Engine lathes, turret lathes, screw machines, milling machines, drilling machines, grinding machines, bolt and nut machinery, pipe machines, shapers, planers, punching and shearing machines, rolls, swaging machines, steel brakes, gear hobbers, gear cutting machines, thread milling machines, gas furnaces, steam, power and drop hammers, forges and blowers, speed lathes, sand sifters and sand blasts, punch presses, boring and turning mills, keyseaters, belt lacing machines, air hoists, trolleys, cranes, electric motors and controllers, pattern shop equipment, and a general line of metalworking machinery for machine shops and manufacturing plants. We would appreciate your inquiries.

SECOND-HAND MACHINERY

FOR SALE BY

R. H. Brown & Co., - - - - - **Box 655, New Haven, Conn.**

Drill press, 2-spindle No. 1 Pratt & Whitney.
Drill press, 4-spindle No. 1 Pratt & Whitney.
Drill press, 6-spindle No. 1 Pratt & Whitney.
Drill press, 4-spindle No. 2 Pratt & Whitney.
Profiler, No. 2 Pratt & Whitney.
Upsetter, Farrel Foundry Co.

FOR SALE BY

Clark Machinery Co.,

Blower, No. 1 Root.
Bolt cutter, 2" Acme.
Boring mill, horizontal, 4" Barrett.
Drills, 4 spindle, 4" Prentice, (8).
Drill press, 8-sp. Western, heavy.
Gear cutter, No. 13 Brown & S.
Grinder, disc, No. 8 Besly.
Grinder, planer type, surf. 24"x4".
Grinder, surface, Pratt & Whitney.
Lathe, 26"x14" Pond, compound.
Lathe, double head key lathe.
Miller, universal, Brainard, b. g.
Millers, Lincoln type, heavy table,
46x72, (3).
Miller, hand, Whitney No. 6.

717 Frankfort Ave. N. W., Cleveland, O.

Planer, 24"x24"x6" Hendey.
Planer, 24"x24"x6" Powell.
Planer, 40"x40"x8" Pond, heavy, 1 hd.
Radial drill, 30" Gang.
Radial drill, 4" Dreses.
Radial drill, 6" Dreses universal.
Screw machine, 14" Warner & S.
Screw machine, 2" Warner & Swasey,
hollow hex.
Screw machine, 2" Cleveland auto.
Shaper, crank, 12" Rockford.
Shaper, crank, 15" Kelly.
Shaper, friction, 15" Hendey.
Shaper, crank, 18" Kelly.
Shaper, friction, 28" Hendey.

FOR SALE BY

Cyril J. Bath, Mch'y. Merchant, 340 Leader News Bldg., Cleveland, O.
Warehouse, 1031 W. Front St.

Following machines now on hand; others available. A pleasure to quote.
BORING MILLS.
54" bar Niles horizontal, table type, gear feed, good.
37" Bullard, one swivel plain and one swivel turret head, gear feed, screw
cutting, good.
6' Pond, 2 swivel heads and drum scoring attachment, old model but good.

DRILLS.

Heavy forge drilling or coring machines, capacity up to 12", (2).
Drill same as above but lighter, capacity to 4".
3-spindle Foote-Burt, 40"x14" table, 8" capacity.
4-spindle Foote-Burt, adjustable rail type, 1" capacity.

HAMMERS.

No. 4 Beaudry Champion power, first class.
800 lb. Sellers plain steam hammer, good.
1000 lb. Lane steam drop, fair.
1500 lb. Hement-Miles steam drop, good.

MISCELLANEOUS.

Bolt cutter, 2-spindle 1" Acme, very good.
Cold saw, 48" Espen-Lucas, high speed blades.
Crankshaft lathe, Tyndall Morris, cap. up to 5" throw, 7' centers, first class.
Crankshaft lathe, 120"x45' Pond, heavy duty.
Gear shaper, 24" Fellows, spur, first class.
Grinder, disc, 18" Gorton, almost new.
Grinder, Yankee turret drill, first class.
Grinder, internal, No. 6 Bryant, 9" swing, first class.
Grinder, ring and surface, 8" Heald, power feed, good.
Keyseater, No. 1 Baker, first class.
Miller, hand, Chicago, good as new.
Pulley lathe, 35" Streit, 2 heads, good.
Shaft turning lathe, 24"x25" American, good.
Slotted, 54" Hewes & Phillips, good.
Wire cut-off and forming machine, 5-16" Toledo automatic.

SECOND-HAND MACHINERY

FOR SALE BY

Simmons Machine Co., Inc., 981-985 Broadway, Albany, N. Y.
New York Office, 721 Singer Building

Machinery for Immediate Delivery.

NEW.

Cutter and reamer grinders, No. 6
Standard univ., delivery 6 wks., (10)
Lathes, 17x8 National, (12).
Lathe, 18x8 Cisco, qck. change gear.
Lathe, 20x8 Cisco.

USED.

Bolt cutter, Acme.
Boring mill, 52" Bement-Niles, vert.
Boring mill, No. 5 Brown & S. vert.
Cutter grinder, Wells universal.
Cutting-off mch., 3" Hurlbut-Rogers.
Gear shaper, 36" Fellows.
Gear cutter, 36" Saunders.
Lathe, 12x5, speed.
Lathe, 14x6 Reed.
Lathe, 18x6 Carroll-J., standard.
Lathe, 20x8 Pond engine lathe.
Lathe, 22x12 American, q. c. gear.
Lathe, 22x14 Blaisdell.
Lathe, 28x20 New York Steam Co.
Lathe, 30x16 New Haven.
Lathe, 34x22 New Haven.
Lathe, 40x16 Harris.

Lathe, 19-38x10 Le Blond high duty,
motor drive.
Miller, No. 1 Bickford.
Millers, No. 1 American, plain, (3).

USED.

Lathe, 60x10 New Haven, boring
and facing.
Miller, No. 284 Bement.
Millers, No. 7 Becker-Brainard, (6).
Millers, No. 2 Brown & S. plain, (2).
Miller, No. 2 Davis-Egan, univ.
Planer, 20x20x6 Putnam.
Planer, 24x24x6 Putnam.
Planer, 24x24x10 Pond.
Planer, 36x36x8 Blaisdell.
Planer, 36x36x12 New Haven.
Punch and shears.
Shaper, 18" Juengst, friction type.
Shaper, 20" Hendey, friction type.
Slotted, 15" Bement.
Trip hammer, Merrill.
Turret lathe, 17-32" Pratt & W.

FOR SALE BY

McCoy-Brandt Machinery Co., 216-218 Penn Ave., Pittsburgh, Pa.

TRAVELING CRANES.

5-ton, 33' span, 110 v., d. c.
10-ton, 33' span, 110 v., d. c.
220 Volts, D. C.
1½-ton, 16' 6" and 25' 6" spans, (3).
5-ton, 42', 46' 6" and 55' spans.
8-ton, 35' span.
10-ton, 40' and 46' 6" spans.
15-ton, 31' 6" and 36' 6" spans.
15-ton, 48', 48' 9" and 50' spans.
20-ton, 42' and 50' spans.
25-ton, 50' and 63' spans.
30-ton, 49' 4" span.

220 Volts, D. C.
5-ton Gantry, 10' 10" span.
3-ton Wall, 2 motor, 4' span.
40-ton Ladle, 59' span.
90-ton Ladle, 48' 9" span.
600 Volts, D. C.
5 and 10-ton, 37' 10" spans.
10 and 20-ton, 39' 11" spans.
Hand Operated.
2½-ton, 22' 7" span.
6 and 8-ton, 20' 7" and 60' spans.
25-ton Pillar, 36' and 35' arms.

LOCOMOTIVE CRANES.

10-ton, 4-wheel, 35' boom.
10-ton, 4-wheel, 38' boom.
15-ton, 8-wheel, 38' boom.

15-20-ton, 4-wheel, 38'-50' booms,
Steam Shovel, drag line equip't.
30-35-ton, 55' boom, with bucket.

MISCELLANEOUS.

Bulldozers, Nos. 1, 2, 4, 5 and 12.
Boiler, 40 h. p., r. t., 60' stack.
Compressors, 10x10", 10x12x10".
Gas engines, 35, 60, 85, 150 h. p.
Generators, 10, 22, 25 k. w., 110 v.
Hammers (power) 75 and 300 lb.
Lathes, 26'x12' Davis, h. s., c. r.
Lathes, 20'x8' Porter, s. s., p. r.
Lathes, 18'x8' L. & S., h. s., t. a.
Lathes, 17'x6' Prentice, h. s., p. r.
Lathes, 16'x6' Reed, s. s., p. r.
Lathes, 15'x8' Johnson, s. s., c. r.
Lathes, 12'x5' Davis, h. s., c. r.
Mine hoist, d. c., s. d., rev.

Motor, 100 h. p., 220 v., 780 rev.
Motors, 15 and 30 h. p., 110 v., d. c.
Motors, 1, 10 and 55 h.p., 500 v., d. c.
Pipe machines, 6, 8 and 12".
Punch, gang, 36" geared, 8800 lbs.
Presses, Nos. 19, 20 and 76 Bliss.
Press, No. 52 Bliss, s. s., 3200 lbs.
Screw machine, 4" Cleveland auto.
Shears, squaring, 48", 50", 108", b.g.
Shears, alligator, cap, 14", 24" rd.
Shear, Lennox rotary bevel, 4" cap.
Straightening rolls, No. 0 Hilles &
Jones, 56" cap., 4" to 10 gauge.
Turret lathes, 12 to 16" swing.

Good equipment—prompt shipments.

SECOND-HAND MACHINERY

FOR SALE BY

The Machinery Warehouse, 3705 S. Ashland Ave., Chicago, Ill.

RADIAL DRILLS.

54" Niles.

60" Gang.

36" x 36" x 16' Sellers, 1 head.

PLANERS.

15" x 5' Porter.

54" x 54" x 21' Sellers, 3 heads.

15" x 8' Reed.

16" x 6' Ames.

16" x 8' Robbins.

18" x 6' Lodge & Davis.

LATHES.

21" x 8' Putnam.

21" x 10' Lodge & Davis.

22" x 12' Fitchburg.

28" x 15' Prentice.

All the above tools are in stock and will be sold in guaranteed condition.
Lathes have hollow spindles, compound carriages and full equipment.

FOR SALE BY

Broadway Machinery Co., 236-238 Broadway, Cincinnati, Ohio

LATHES.

10" x 3' Carroll, h. s., p. r.

18" x 8' American, h. s., c. r., with tapping attachment.

10" x 4' Reed, h. s., c. r.

18" x 10' Robbins, h. s., c. r., with raising blocks.

13" x 6' Sebastian, h. s., c. r.

30" x 16' Harris, compound rest.

15" x 6' American, h. s., c. r.

48" x 10' N. Y., compound rest.

16" x 6' Porter, h. s., c. r.

68" x 36' Niles, compound rest.

17" x 12' Greaves-Klusman, h. s., c. r.

21" American, crank.

21" x 10' American, crank, b. g.

20" Hendey, friction.

24" American, geared.

DRILLING MACHINES AND PLANERS.

No. 2 Kempsmith, plain, belt feed.

24" x 24" x 6' New Haven, one head.

No. 3 Cincinnati S. & T. Co. plain, belt feed.

30" x 30" x 8' Fitchburg, one head.

No. 9 Niles vertical, 32" table.

36" x 36" x 10' Pond, one head.

48" x 48" x 24' old style, good.

FOR SALE BY

Wm. C. Johnson & Sons Machinery Co.,

210-212 Washington Ave.,

St. Louis, Mo.

LATHES.

12" x 5' Fay & Scott.

25" x 16' McFarland & Nottingham.

16" x 5' Prentice Bros.

30" x 20' New Haven.

PLANERS AND SHAPERS.

24" x 24" x 6' Powell planer.

16" Geo. D. Walcott shaper.

32" x 32" x 14' Niles planer.

20" Lodge & Davis shaper.

15" Barker crank shaper.

20" Hendey shaper.

DRILLING MACHINES.

20" square base, (2).

32" Hamilton.

26" Bickford, sliding head.

34" Barnes.

28" Aurora.

42" Niles, extra heavy.

AIR COMPRESSORS.

8x8 belted.

10x10x10 steam driven.

9x9x9 steam driven.

500 cu. ft., belted.

MISCELLANEOUS.

Air hammers, (6).

Pipe machine, 8" Bignall & Keeler.

Bolt cutter, 2" Schlencker.

Pipe machines, 4 and 6" portable.

Horing mill, 83" one head.

Presses, inclinable, (2).

Borer, 2-spindle Newton horizontal.

Punch press, heavy, dbl. housing.

Hammers, steam, 360 and 600 lbs.

Punch, dbl. end, No. 3 Long & A.

Hammer, 80 lb. Yeakley.

Punch and shear, 48" throat.

Hammers, helve, 100 lb. Bradley, (2).

Riveter, 10" cylinder compression.

SECOND-HAND MACHINERY

FOR SALE BY

Peninsular Machinery Co.,

Band saw, 24" Marsden.
 Beader, No. 024.
 Beader, No. 8 Niagara, power.
 Blower, No. 1 Monogram.
 Centering machine, 24" capacity.
 Chuck, 24" 4-jaw, Ind.
 Drill, 14" single spindle sensitive.
 Drill, 14" Mechanics.
 Drill, 4" wall type radial.
 Drill, 12" Barr sensitive.
 Drill, 4-spindle Bickford.
 Drill, 14" Allen sensitive.
 Exhauster, No. 1 American.
 Forming roll, 14 ga., 48" long.
 Grinder, emery, No. 3 Blount.
 Grinder, saw, Cochrane-Bly.
 Grinder, cutter, No. 1 Garvin.
 Grinder, wet tool, 14" Sterling.
 Grinder, twist drill, New Yankee.
 Groover, No. 3 Niagara.

110 Beaubien St., Detroit, Mich.

Hack saw, No. 4 Milford.
 Hack saw, No. 11 Millers Falls.
 Key lathe, 12" Cobb, double end.
 Keyseater, No. 1 Davis.
 Keyseater, No. 2 Mitts & Merrill.
 Keyseater, No. 2 Baker Bros.
 Lathe, 14"x6' Fairbanks, c. r.
 Lathe, 14"x6" eng., comp. rest.
 Lathe, 19"x10' LeBlond, auto.
 Lathe, 19"x8" engine, quick change.
 Miller, Thurston die miller.
 Oil separator, 24" centrifugal.
 Polishing lathe, No. 8 Hansen.
 Polishing lathe, No. 7 Diamond.
 Press, No. 5 Perkins.
 Press, No. 4 Michigan, o. b. i.
 Speed lathe, 11"x6" Blount.
 Speed lathe, 16"x6" Blount.
 Speed lathe, 13"x5" Blount.

FOR SALE BY

L. F. Seyfert's Sons, Inc.,

437 N. 3rd St., Philadelphia, Pa.

LATHES.

24"x14' American, taper attachment.
 22"x10' American, qk. change gear.
 22"x12' Perkins.
 18"x10' Rahn-Mayer-Carpenter.
 18"x10' Porter.
 18"x10' South Bend gap lathe.
 18"x10' South Bend.
 17"x14' Porter.
 16"x 8' South Bend.

16"x 8' G. M.

16"x 8' South Bend.
 16"x 8' Rockford.
 15"x 6' Monarch.
 15"x 6' South Bend.
 14"x 6' Davis.
 14"x 6' Prentice.
 13"x 5' South Bend.
 10"x45" Sebastian.

SHAPERS.

20" Kelley, crank.
 16" Rockford, back geared.
 15" Niles-Bement-Pond, crank.

PRESSES.

No. 4 Adriance, inclinable.
 No. 3 Greenard arbor press.
 1-P-3 Ferracute special.

BOLT AND PIPE CUTTERS.

12" Eaton-Cole & Burnham.
 No. 2 Bignall & Keeler, (4).
 Curtis & Curtis capacity $\frac{1}{2}$ to 2".
 No. 2 $\frac{1}{2}$ Eaton, Cole & Burnham.

6" Cox.
 1" Acme, double head.
 2" Acme, double head.

PUNCHES AND SHEARS.

32" Peck, Stow & Wilcox foot power
 squaring shear.
 No. 4 Buffalo combined punch and
 shear (hand power).

MISCELLANEOUS.

Keyseater, Mitts & Merrill.
 Milling machines, plain, No. 1
 Milwaukee, (2).
 Planer, 36"x36"x8" American, 2 hds.
 Planer, 32"x32"x8" Pond, 2 heads.
 Radial drill, plain, 30" Gang.
 Slotter, 12" New York Steam
 Engine Co.
 Slotter, 15" Niles.

Drill, 22" Barnes, col.
 Drills, 20" Barnes, col., (8).
 Drills, 20" Aurora, col., (6).
 Drill, 17" Rockford, col.
 Drill, 12-spindle Fox multiple.
 Hammer, steam, 400 lb. Erie, single
 frame.
 Hammer, helve, 15 lb. Bradley.
 Hammer, No. 0 Champion.

SECOND-HAND MACHINERY

FOR SALE BY

Western Machinery Co.,

26"x14' Fifield h. s., c. r.
28"x14' Perkins c. r.
24"x16' Hamilton q. c. g.
20"x10' Star h. s., c. r.

Boring mill, vertical, 68"-120" Betts,
motor driven, 2 heads.
Boring mill, vertical, 51" Bullard,
motor driven, 2 heads.
Keyseater, No. 2 Mitts & Merrill.

MISCELLANEOUS.

610 Baymiller St., Cincinnati, O.

LATHES,

16"x12' American h. s., c. r.
16"x 8' Greaves-Klusman, h. s., c. r.
15"x 5' Johnston, taper.
14"x 6' Lodge-Davis h. s., c. r.

Milling machine, slab, No. 2 Newton.
Milling machine, vert., Brainard.
Milling machine, Lincoln.
Shaper, 16" Smith & Mills.
Shaper, 16" Ohio.

FOR SALE BY

The Chas. A. Strelinger Co.,

Air compressor, 6x8 Gardner-Rix,
single cylinder vertical, with un-
loader and tank.
Broaching machine, No. 3 Lapointe,
with broaches.
Cold metal saw, No. 11½ Higley.
Die sinker, Hooper Bros.
Gear cutter, 16" G. & E. automatic.
Gear cutter, 30" G. & E. automatic.
Grinder, internal, W. & S., dbl. end.
Grinder, ring, No. 210 Heald.
Hammer, steam, 1600 lbs. Cham-
bersburg.
Lathe, 14"x 6' Reed.
Lathe, 14"x 8' Reed.
Lathe, 16"x 8' Porter, with chuck.
Lathe, 18"x 8' Pond, plain rest.

96-110 Bates St., Detroit, Mich.

Lathe, 24"x10' Bradford, c. r. & chk.
Miller, No. 2 Carter & H., Lincoln.
Miller, 26" Becker-Brainard, plain.
Miller, No. 13 Pratt & W., Lincoln.
Planer, 10"x10"x30" Federal, on
stand, with chuck.
Planer, 24"x24"x 6' American.
Planer, 24"x24"x 6' Wheeler.
Riveter, 1-16" Shuster.
Riveter, 4" Shuster.
Screw machine, 1" Costello.
Shaper, 14" Hendey.
Shaper, crank, 16" G. & E., b. g.
Shaving machine, No. 5 P. & J.
Slotter, 10" Betts.
Tumbling barrel, steel, 30"x48"
Northern.

FOR SALE BY

Frank Toomey, Inc.,

127-131 N. Third St., Philadelphia, Pa.

LATHES AND TURRETS.

60"x12' Putnam, s. s., c. r.
52"x26' Baker, triple geared.
36"x16' Springfield, triple geared.
30"x10' Fifield, triple geared.
26"x14' Star.
20"x10' Prentice.
20"x8' Prentice, t. a.
18"x10' Rahn-Meyer, t. a.
18"x10' Prentice, quick change.
18"x7' Lodge & Davis, tur. on bed.
16"x12' Le Blond, motor driven.
14"x10' Prentice.

MISCELLANEOUS.

Boring mill, vertical, 36" Baker.
Drill, 36" Baker, motor driven.
Hammer, steam, 250 lb. Bement.
Hammer, steam, 800 lb. Morgan.
Miller, plain, No. 1 Garvin.
Miller, No. 3½ Fox, plain, vertical
attachment and index head.
Milling machine, No. 4 Cincinnati,
plain, motor drive.
Milling machine, No. 3 Cincinnati.
Miller, vertical, Beaman-Smith.

13"x14' Carroll Jamieson, new.
12"x5' Shepard, new, (6).
Conradson turret lathe, heavy, 34"
hollow spindle, 40" swing.
24" Gisholt, motor drive.
2"x24" Jones & Lamson.
6A Potter & Johnston.
24" wire feed Foster, ring.
12" h. s., P. & W., wire feed, power
feed to turret and sliding back
gears, friction head.
24" Cleveland plain automatics, (4).

Milling machine, vertical, Putnam.
Planer, 22"x22"x6' Powell.
Planer, 30"x30"x12' Bement type.
Planer, 48"x48"x15' Sellers.
Planer, 54"x48"x8'6" Sellers.
Pulley borer, 60" Harrington.
Radial drill, 42" Betts.
Shaper, 20" Cincinnati, b. g.
Shaper, 24" American, b. g.
Shaper, 30" Cincinnati, triple
geared.

SECOND-HAND MACHINERY

FOR SALE BY

W. L. Perkins, Jr.,

30 Church St., New York

LATHES.

24"x10' Putnam, c. r., cross feed.	32"x10' Putnam, c. r., cross feed.
26"x14' Putnam, c. r., cross feed.	70" Sellers d. h. wheel lathe.
28"x14' Putnam, c. r., cross feed.	80" Bement d. h. wheel lathe.

PLANERS.

30"x30"x10' Chandlers, 2 heads.	36"x36"x10' Woodward & P., 2 hds.
32"x32"x8' Pond, 2 heads.	60"x60"x14' Sellers, 2 heads.

RADIAL DRILLS.

5' Dreses, tapping.	7' Baush, tapping.
6' Bickford, tapping.	8' Pond, tapping.

FOR SALE BY

Girard Machine & Tool Co., 491-493 N. Third St., Philadelphia, Pa.

LATHES.

18"x8' Willets, c. r.	14"x8' Prentice Bros., hol. spindle.
16"x8' Johnson, solid spindle.	14"x6' Lodge & Shipley, hol. spindle.
16"x8' Porter, hollow spindle.	10"x4' Seneca Falls, foot power.
16"x6' Pratt & Whitney, taper att.	10"x4' Gould, solid spindle.

MISCELLANEOUS.

Boring mills, turret head vertical, 36" Brown & Sharpe, (2).
Boring and turning mill, 7' Hilles & Jones.
Broaching machine, No. 2 Lapointe.
Cold cutting-off saws, capacities 4", 5" and 6" round.
Grinder, combination disc, No. 14 Gardner.
Hammer, steam drop, 600-lb. Bement, 64" diam., 30" stroke.
Milling machine, No. 1 Brainard back geared, plain, table 10"x44".
Pipe cutting and threading machines, 4" and 6".
Planer, 40"x40"x12' New Haven, with one head.
Radial drill, 5' Prentice, belt drive.
Shaper, 18" Cincinnati, double head, with two tables on 12' bed.
Slab miller, 17"x8' Beaman & Smith, with two horizontal spindles.
Stamping and punching presses, a large number of the open back inclinable, straight side and arch types.
Turret and screw machines, large stock of various sizes and makes.

FOR SALE BY

Chas. Molitor Machinery Co., 215-221 S. Clinton St., Chicago, Ill.

LATHES.

14"x6'4" Lodge & Davis.	24"x12' Lodge & Davis.
14"x8' American.	24"x12' Putnam.
18"x8' Bradford.	32"x10' Gleason.
18"x10'3" Lodge & Davis.	32"x14' Putnam.
20"x10'6" Lodge & Davis.	52"x16'4" New Haven.
20"x12' Lodge & Davis.	

SHAPERS.

12' Pedrich-Ayer, traverse.	20" Gould & Eberhardt.
14" Steptoe.	26" Walker.

MILLERS.

No. 2 Garvin, Lincoln type.	F. E. Reed, Lincoln type.

PLANERS.

18"x6' Whitcomb.	30"x7' Whitcomb.
20"x6' Wheeler.	30"x8' Fitchburg.

MISCELLANEOUS.

Arch press, 48".	Grinders, knife, (3).
Boring machine, horizontal, 12"x18".	Punch, heavy, 21" throat.
Boring mill, car, 56".	Slotter, Putnam Machine Co.
Drill, universal, 36" Grand.	6'-10' Brakes, rollers, air compressors.
Drill, univ., 31" Gould & Eberhardt.	

100 other brass, iron, tinnings' and wood-working machines.

SECOND-HAND MACHINERY

FOR SALE BY

Fred. C. Dickow, - - - - - **35 S. Desplaines St., Chicago, Ill.**

LATHES.

18x8 Sebastian-May, like new, \$ 465.	18x10 Putman.
28x10 Pond, raising blocks 36" - 450.	Old 14" turret lathe..... \$ 50.

14" Hendey friction, good..... \$ 120.	18" Cin. dbl. hd. traverse shaper
20" Juengst friction shaper.	12" bed, weight 13000 lbs..cheap.

PUNCH AND SHEARS AND PRESSES.

L-10 Rock River, not geared..... \$ 145.	No. 2 Ferracute, in A 1 cond., \$ 100.
L-19 Rock River, back geared..... 175.	No. 1 Norton Bros., good..... 60.

MISCELLANEOUS.

Bement vertical miller, power hacksaws, drill presses, air compressors, kick press, grinders, index centers, etc.

FOR SALE BY

Strong & Hery Co., - - - - - **210 State St., Rochester, N. Y.**

Second-hand machinery in stock.

LATHES

16x7 Bridgeport, h. s., c.r. p. c.,	18x8 Boye & Emmes, h.s., p. c., c. r.,
heavy type.	extra turret mounted on carriage.

18x8 Porter, h. s., p. c., c. r.	16x6 Porter, h. s., p. c., c. r.
----------------------------------	----------------------------------

DRILL PRESSES.

34" Barnes, sliding head.	4-sp. Kern, b. b. high-speed, (new).
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4-sp. No. 2 b. b. high-speed Avey.	4-sp. Burke cutting-off machine.
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PUNCH PRESSES.

No. 20 Bliss with guards, (2).

CUTTING-OFF MACHINES.

6" Cochrane & Bly cold saw.	3" Burke cutting-off machine.
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PLANER.

30x30x8 Wilson, heavy type.

RADIAL DRILL.

3½' Morris radial drill, cone driven.

FOR SALE BY

The Osborne & Sexton Machinery Co., - - - - - **Columbus, Ohio.**

LATHES

13"x 5' Reed, hollow spindle.	18"x 8' hollow spindle, comp. rest.
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14"x 5' rise and fall rest.	20"x 8' Chard, comp. rest, h. s.
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15"x 6' hollow spindle, comp. rest.	21"x14' Fifield, compound rest.
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16"x 6' hollow spindle, comp. rest.	23"x10' Putnam, r. & f. rest.
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18"x 8' hollow spindle, comp. rest.	26"x18' Schumacher & B., h. s., c.r.
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SHAPERS AND PLANERS.

12" Gould Bros.	30" Morton, draw cut.
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14" Hendey.	16"x16"x 3' Pratt & Whitney.
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16" Ohio, new.	24"x24"x 4' Industrial Works.
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20" Steptoe.	30"x30"x12' New Haven.
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24" Gould & Eberhardt.	36"x36"x12' Niles, worm drive.
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TURRETS AND SCREW MACHINES.

16" hand, 4" automatic chuck.	2" Cleveland automatics, (6).
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16" turret, 14" hollow spindle.	4" and 14" Cleveland auto., 1 each.
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15"x 5' Fox universal turret.	2" Hartford automatic.
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MISCELLANEOUS.

Broaching machine, 6½" Waterbury.	Hydraulic press, 10 ton.
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Centering machine, 6" P. & W.	Miller, hand, Fox No. 2.
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Cold saws, 3" & 5" Lucas.	Miller, Industrial, 7x29" table.
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Cutting-off machines, 2-2" & 2-3".	Miller, Lincoln, 12"x48" table.
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Drills, 4-spindle sensitive, (2).	Pipe machines, 2" and 6" sizes.
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Drills, for auto rims, (2).	Riveter, 4" Hanna, 12" gap.
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Hammers, 750 and 5000 Toledo.	Rolls, shovel blanking.
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Used Machine Tools

What do you want?

If it's a high class Used Machine Tool you are looking for, better let me know of your wants, as I may save you both Money and Time.

What have you for sale?

If it's used machinery that you want to either sell or exchange, I can help you.

Service---Low Cost

I devote my entire time and experience to the bringing together of Buyer and Seller, so that a deal can be quickly made.

If you deal, a small commission will be charged; otherwise this service costs you nothing.

State your wants, or carefully describe the machines you have for sale in your first letter, which will receive my prompt personal attention.

D. M. OSBORNE, Suite 917, American Trust Building, **CLEVELAND, OHIO**



5 Sizes

PUNCH

$\frac{3}{8}$ " in $\frac{3}{8}$ "

Shear

$\frac{3}{8}$ " x 2" Rods

1" round

\$98.50

$\frac{1}{2}$ " **\$125**

$\frac{5}{8}$ " **\$180**

$\frac{7}{8}$ " **\$215**

1" **\$290**

Quick delivery. Do work of heavy punches at half cost.

USED TOOLS.

Band saw, Chgo., 26" tilt.tbl. \$65.
Band saw, 36" G. & K., tilt.tbl. \$85.
Blower, No. 4 Root, 2900 cu. ft. 325.
Blower, No. 40 Sturt., 15" out. \$22.
Boiler, marine, 125 h.p., guar. 1200.
Boring mill, vert., 72x48", \$2200.
Boring mill, hor., 61"x22", \$700.
Boring mill, hor., 48"x14" \$600.
Broach, mch., W. & M. 10" whl. 45.
Disc grinder, No. 10 Besly. \$235.
Drill, EMCO, No. 1 bch, sens. \$14.
Drill, 16", sens. Fox, slid. hd. \$45.

Drill, 20", Fitchburg, sl. hd. \$55.
Drill, 25" Fitchburg, b.g.p.f. \$135.
Drill 28", b. g. power feed. \$145.
Drill, 12 spindle, Gardam, \$1200.
Engine, 400 h.p., new, guar. \$4200.
Gas engine, 30 h. p. Otto, (new
\$1300) fine condition, \$800.
Generator, 100 k. w., d. c. 125
h. p. engine, \$2750.
Hammer, 5000 Toledo, brd. d. 3500.
Hammer, 1100 lb. Amer. stn. 1160.
Hoist Ex. McMyler. 42' b'm. 3500.
Hoist chain, 2 ton capacity, \$20.
Keyseater, Davis, No. 1. c.s. 140.
Lathe, 36" x 18" Fifield hvy. \$1000.
Pipe threader, 2" B. & K. pwr. \$45.
Planer, Flather, 27" x 6", hvy. \$725.
Press, hyd., 300 ton, 18" hor. \$750.
Press, No. 5 Am. Can. grd. st. s. 700.
Punch & sh. L. & A. No. 8, 4" thr. 285.
Punch, $\frac{1}{2}$ " in $\frac{1}{2}$ ", 14" thr. d. b. g. \$285.
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Saw, cold, Burke, 5" cap., \$75.
Sawtbl. comb. tilt. new. guar. \$60.
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Shear, alligator, cap. 24" sq. \$1000.
Shear, pwr. 42", 1" cap. d. b. g. \$295.
Slotter, screw feed, \$20.
Wire crimper, S. & K., auto. \$375.

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No. 683—Mueller grindstone and frame.
No. 661—Globe tool sharpener for $\frac{1}{2}$ " x 6" wheels.
No. 690—Marion buffing machine.
No. 1690—Rockford Drilling Co.'s straightening machine.
No. 515—Oliver No. 3 wood trimmer on pedestal.
No. 1807—Bowscher balancing ways.
No. 2531—Sturtevant blower.
No. 1363—E. H. Mumford split pattern molding machine.
No. 1108—No. 8 power arbor press.
No. 1336—No. 60 Monogram Sturtevant blower.
No. A-2033—Laidlaw-Dunn-Gordon duplex feed pump.
No. C—Niles 25" x 16" 4-step Cone Head single back geared lathe.
No. 1349—Covel Mfg. Co. saw sharpener.
LeBlond Sensitive Drill Univ. swivel table for radial drill.
15 h. p. Gas Engine, 215 r.p.m.

**The Lodge & Shipley Machine Tool Co.
Cincinnati, Ohio, U. S. A.**

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36" throat, Cleveland.
18" throat, Cleveland, quick-acting.

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72" x 72" x 14' Bement-Miles, 4 heads.
62" x 62" x 28' Betts Machine Co., 2 heads.
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36" x 36" x 20' Pond Mch. Tool Co., 3 hds.

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10' Niles Tool Works, 2 heads.
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8" bar "Floortype" Horizontal Boring, Drilling and Milling Machine, with out-board support. Travel of head carrying working parts along the bed, 24', Niles Tool Works.

BIG—TURRET LATHES

Full auto. Potter & Johnston, 44" hole.
Full auto. Potter & Johnston, 2" hole.
Semi-automatic American, 34" hole.
No. 13 Garvin, 1 15-16" wire fd., 24" hole.
Ring Turret Lathe, 24" hole.

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56" swing, 16' bed, Putnam, triple-grd.
50" swing, 28' bed, Fitchburg, triple-grd.
44" sw., 26' bed, Niles Tool Wks., tpls.-grd.
38" swing, 18' bed, Fitchburg.
30" swing, 14' bed, Bement-Miles.

BIG—MILLING MACHINES

No. 3 Newton, vertical and horizontal spindle, 36" between housings, 5' table.
24" x 14' Bement-Miles "Planer type."

BIG—STEAM HAMMERS

3500 lb. Bement-Miles, double frame.
2500 lb. Sellers Co., single frame.
1500 lb. Chambersburg, single frame.
1000 lb. Bement, single frame.

Big Slotter—Big Multiple-spindle Drill—Big Pipe Machines—Big Radial Drills—Big Grinder
Write for complete List No. 247

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"New style" McCabe double-spdl. lathes, 26 and 48" swing, 12' beds, triple-gearred, for shells up to 9 and 12".

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For Sale

Two 20-Spindle, 10-Inch Gang Sensitive Drilling Machines

20-spindle Barnes Gang Drilling Machines, 10 spindles each side, each column comprising two spindles and being adjustable lengthwise. Distance between spindles when equally divided, 12"; can be adjusted as close as 8" centers. All spindles driven by friction disc, giving large speed range. Capacity up to $\frac{3}{8}$ " drills. Distance between table and spindle when extended 8"; travel of spindle $4\frac{1}{2}$ "; diameter of spindle 15-16". Length of table 10'6". Height over all 6'8". Weight approximately 7000 lbs. Cost new, each, \$2000. Condition good, practically new. Suitable for all kinds of rapid drilling and the use of many operators in small space.

Photograph and price upon request
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ENGINE LATHES.

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- 1-14" x 6' Pratt & Whitney.
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- 1-14" x 6' Morris.
- 1-14" x 6' American.
- 1-14" x 6' Lodge & Davis.
- 1-14" x 6' LeBlond.
- 1-14" x 6' Flather.
- 1-15" x 6' Blaisdell.
- 1-15" x 6' Cisco.
- 1-15" x 6' Bradford.
- 1-15" x 6' LeBlond.
- 1-15" x 6' Davis.
- 1-16" x 6' Hamilton.
- 1-16" x 8' Prentice.
- 1-16" x 8' Von Wyck.
- 1-16" x 8' Lodge & Davis.
- 1-16" x 8' Flather.
- 1-16" x 8' Monarch.
- 1-16" x 8' LeBlond.
- 1-16" x 10' Lodge & Shipley.
- 1-16" x 14' American.
- 2-17" x 6' Blaisdell.
- 1-17" x 8' Draper.
- 1-17" x 8' Greaves & Klusman.
- 1-18" x 8' Schumacher & Boye.
- 2-18" x 8' Lodge & Shipley.
- 1-18" x 8' Davis & Egan.
- 1-18"-31" x 8' American gap.
- 2-18" x 10' Bradford.
- 1-18" x 12' Davis & Egan.
- 1-18" x 14' New Haven.
- 1-18" x 12' Champion.
- 1-19" x 8' Silk-Cincinnati.
- 1-19" x 8' Rahn.
- 1-19" x 10' Rahn.
- 1-19" x 12' Lodge & Davis.
- 1-20" x 6' Lodge & Shipley.
- 1-20" x 8' Bullard.
- 1-20" x 8' Greaves & Klusman.
- 2-20" x 10' American.
- 1-20" x 12' Hamilton.
- 1-20" x 12' Flather.

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- 1-21" x 14' Flather.
- 1-21" x 16' LeBlond.
- 1-22" x 8' Flather.
- 1-22" x 10' Schumacher & Boye.
- 1-22" x 12' Greaves & Klusman.
- 1-22" x 12' Economic.
- 1-22" x 16' Flather.
- 1-24" x 10' New Haven.
- 1-24" x 12' Draper.
- 1-24" x 12' New Haven.
- 1-24" x 12' Blaisdell.
- 1-24" x 16' Davis & Egan.
- 1-25" x 10' American.
- 1-25" x 12' Walcott.
- 1-25" x 14' Bradford.
- 1-25" x 20' Mueller.
- 1-25" x 26' American.
- 1-26" x 10' Greaves & Klusman.
- 1-26" x 12' Davis.
- 1-28" x 12' Fay & Scott.
- 1-28" x 16' Fay & Scott.
- 1-31" x 12' Bradford.
- 1-32" x 12' Rahn.
- 1-33" x 16' Walcott.
- 1-36" x 12' Fifield.
- 1-38" x 16' Fifield.
- 1-40" x 16' Gleason.
- 1-42" x 12' Putnam.
- 1-45" x 18' New Haven.
- 1-60" x 16' Fitchburg.

MULTIPLE DRILLS.

- 1- 6 spindle Quint.
- 3- 6 spindle Valley City.
- 1- 6 spindle Fox.
- 1- 6 spindle Baush.
- 2- 8 spindle Gardam.
- 1- 8 spindle Baush.
- 1-12 spindle Quint.
- 2-12 spindle Pratt & Whitney.
- 2-16 spindle Baush.
- 1-24 spindle Pratt & Whitney.

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**“The Box with the Hem
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